Poster Session 1

December 4th, Tuesday 11:00-12:30 Room: Poster I (5th Floor)

Area 3: Crystalline Silicon Solar Cells and Technologies / Area 7: Terrestrial PV Systems

Area 3

4P-P1-01 CRYSTAL QUALITY IMPROVEMENT OF SOLID-PHASE CRYSTALLIZED EVAPORATED POLY-SI FILMS BY IN-SITU DENSIFICATION ANNEAL

S. He[1], B. Hoex[2], D. Inns[1], I. C. Brazil[1], P. I. Widenborg[1] and A. G. Aberle[1]

[1]The University of New South Wales, Australia, [2]Eindhoven University of Technology, The Netherlands

4P-P1-02 PURIFICATION POSSIBILITY OF LOW-PURITY SILICON THIN FILMS USING REDUCTION POWER OF ALUMINUM

T. Ito, Y. Aoki, E. Sudo and T. Motohiro

Toyota Central Research and Development Laboratories, Inc., Japan

4P-P1-03 THE EFFECT OF BULK LIFETIME DISTRIBUTION OVER MULTICRYSTALLINE SI WAFER ON SOLAR CELL EFFICIENCY

Y. Do, J. Ahn and J. Jeong

LG Chem. Ltd / Research Park, Korea

4P-P1-04 HEAT TRANSFER BY THE GEOMETRIC PARAMETERS VARIATION OF HEAT EXCHANGER IN DIRECTIONAL SOLIDIFICATION PROCESS

J. W. Shur, J. H. Hwang, Y. J. Kim and D. H. Yoon

Sungkyunkwan University, Korea

4P-P1-05 3D GLOBAL ANALYSIS IN A UNIDIRECTIONAL SOLIDIFICATION PROCESS OF MULTICRYSTALLINE SILICON FOR PHOTOVOLTAIC

H. Miyazawa, L. J. Liu, S. Nakano, Y. Kangawa and K. Kakimoto

Kyushu University, Japan

4P-P1-06 MINORITY-CARRIER COLLECTION MECHANISMS IN THE BASE AND DIFFUSED REGIONS IN ONE-DIMENSIONAL SOLAR CELL

S. Shaie, K. A. Breh and M. Almotawakel

Sana'a University, Republic of Yemen

4P-P1-07 ANALYSIS OF CARBON DISTRIBUTION AND SIC PRECIPITATION USING UNIDIRECTIONAL-SOLIDIFICATION PROCESS FOR MULTI-CRYSTALLINE SILICON

S. Nakano, L. J. Liu, X. J. Chen, H. Miyazawa, Y. Kangawa and K. Kakimoto

Kyushu University, Japan

4P-P1-08 DEGRADATION OF THE MINORITY CARRIER LIFETIME CAUSED BY Mn-CORRELATED DEFECTS IN Ga-IMPLANTED Si:P

S. Beljakowa[1], G. Pensl[1] and M. Rommel[2]

[1]University of Erlangen-Nuernberg, Germany, [2]Fraunhofer-Institut fuer Integrierte Systeme und Bauelementetechnologie (IISB), Germany

4P-P1-09 POLYCRYSTALLINE SILICON SOLAR CELL PROBLEM: THEORY AND APPLICATION

M. K. AL-Motawakel

Sana'a University, Republic of Yemen

4P-P1-10 PURIFICATION OF METALLURGICAL GRADE SILICON IN FRACIONAL MELTING PROCESS

W. Lee[1], W. Yoon[1] and C. Park[2]

[1]Korea University, Korea, [2]KCC Central Research Institute, Korea

4P-P1-11 UNIFORMITY OF ELECTRICAL AND CRYSTAL QUALITY IN POLYCRYSTALLINE Si SUBSTRATES FOR SOLAR CELLS

S. Tanaka[1], K. Imai[1], T. Kagawa[1], A. Ogura[1], Y. Ohshita[2], K. Arafune[2], H. Kawai[2], F. Kusuoka[2], M. Tajima[3] and M. Inoue[1, 3]

[1]Meiji University, Japan, [2]Toyota Tech. Inst., Japan, [3]ISAS/JAXA, Japan

4P-P1-12 GROWTH OF CRYSTALLINE SI FILM BY USING LIQUID PHASE EPITAXY FROM SI PURE MELT FOR SOLAR CELL APPLICATIONS

K. Kutsukake[1], H. Kodama[1], Z. Wang[1], N. Usami[1], K. Fujiwara[1], Y. Nose[2] and K. Nakajima[1]

[1]Tohoku University, Japan, [2]Kyoto University, Japan

4P-P1-13 CALCULATION STUDY OF THE EFFECT OF IRON CONTAMINATION ON MINORITY CARIIER LIFETIME IN N-TYPE AND P-TYPE SILICON WAFERS

M. Dhamrin, M. Suda, T. Saitoh and K. Kamisako

Tokyo University of Agriculture and Technology, Japan

4P-P1-14 GROWTH AND CHARACTERIZATION OF N-TYPE POLYCRYSTALLINE SILICON INGOTS

K. Arafune, M. Nohara, Y. Ohshita and M. Yamaguchi

Toyota Technological Institute, Japan

4P-P1-15 THE REFINING BEHAVIORS OF SILICONE WITH A “WASHING OUT” TECHNIQUE IN FRACTIONAL MELTING

K. Choi and W. Yoon

Korea University, Korea

4P-P1-16 REFINING MECHANISMS AND IMPURITIES BEHAVIORS IN THE FRACTIONAL MELTED SILICON

J. Lee[1], W. Yoon[1] and J. Kim[2]

[1]Korea University, Korea, [2]Hongik University, Korea

4P-P1-17 EFFECT OF GRAIN BOUNDARIES ON METAL DISTRIBUTION IN POLYCRYSTALLINE SILICON FOR SOLAR CELLS

H. Kawai, K. Arafune, Y. Ohshita and M. Yamaguchi

Toyota Technological Institute, Japan

4P-P1-18 STRENGTH CHARACTERIZATION AND PROOF TESTING OF THIN SOLAR WAFER

S. Schoenfelder, A. Bohne and J. Bagdahn

Fraunhofer Institute for Mechanics of Materials Halle, Germany

4P-P1-19 GRAIN BOUNDARY POTENTIAL BARRIER HEIGHT IN POLYCRYSTALLINE SILICON : EFFECT OF GRAIN BOUNDARY STRUCTURE AND IMPURITY

Y. Nishibe[1], K. Kido[1] and S. Tsurekawa[2]

[1]Tohoku University, Japan, [2]Kumamoto University, Japan

4P-P1-20 MICROSTRUCTURAL CHARACTERIZATION OF BULK POLYCRYSTALLINE SILICON WAFER FABRICATED BY DIRECT CHILL CASTING

B. Hur[1], H. Seong[1], C. Suk[2] and K. Kang[1]

[1]The Gyeongsang National University, Korea, [2]Komex INC, Korea

4P-P1-21 DFECT STRUCTURES IN CAST-GROWN POLYCRYSALLINE SILICON

Y. Ohshita[1], K. Arafune[1], T. Kuba[2], A. Ogura[3] and M. Yamaguchi[1]

[1]Toyota Technological Institute, Japan, [2]JEOL Ltd., Japan, [3]Meiji University, Japan

4P-P1-22 EFFECT OF SILVER THICK FILM PASTE ON SCREEN PRINTED OHMIC CONTACTS OF SILICON SOLAR CELLS

Late News

J. Zheng[1], Y. Zhang[1], T. Gong[2], Y. Aao[2], Y. Yang[1], L. Ding[1] and G. Chen[1]

1East China University of Science and Technology, China, 2Shanghai Solar Energy Science and Technology Co Ltd., China

4P-P1-23 REAL-TIME OBSERVATION OF UNIDIRECTIONAL SOLIDIFICATION PROCESSES FOR HIGHER-QUALITY MULTICRYSTALLINE SILICON INGOTS

Late News

I. Yamaga, K. Yamada, N. Araki, H. Suzuki and T. Saitoh

Dai-Ichi Kiden Corp., Japan

4P-P1-24 AN OPTIMUM CONTROL STRATEGY FOR ENERGY MANAGEMENT IN A REMOTE AREA STAND-ALONE PV SYSTEM

A. E. A. Nafeh

Electronics Research Institute, Egypt

4P-P1-25 FUZZY LOGIC OPERATION CONTROL FOR PV-DIESEL-BATTERY HYBRID ENERGY SYSTEM

A. E. A. Nafeh

Electronics Research Institute, Egypt

4P-P1-26 PERFORMANCE EVALUATION OF SMALL PHOTOVOLTAIC STAND-ALONE SYSTEMS

X. Zou, L. Bian, Y. Zhai and H. Liu

Chinese Academy of Sciences, China

4P-P1-27 HIGH EFFIECIENCY SWITCHING CHARGER FOR PHOTOVOLTAIC POWER SYSTEMS BASED ON BOOST CONVERTERS

T. Tanitteerapan[1] and S. Suteabtawan[2]

King Mongkut's University of Technology Thonburi, Thailand

4P-P1-28 POWER SUPPLY FOR PHOTOVOLTAIC POWERED NEON SIGH FOR ADVERTISING BORAD IN REMOTE AREA BASED ON TV FLYBACK TRANSFORMERS

T. Tanitteerapan[1], and B. Yimnoi[2]

[1]King Mongkut's University of Technology Thonburi, Thailand, [2]Chaiyapoom Technical Collage, Thailand

4P-P1-29 EXPERIMENTAL STUDY OF STANDALONE PHOTOVOLTAIC SYSTEM

W. Shen and T. Yoong

Monash University, Malaysia

4P-P1-30 ASSESSMENT OF PV/HYDRO/DIESEL HYBRID SYSTEM TO SAVING ENERGY OF ROYAL PROJECT RESEARCH STATION AT Mea-ya-noi

J. Thongpron[1,2], R. Watjanakunanan[1,3] and K. Kritikara[1,3]

[1]Clean Energy Systems Group (CES), Thailand, [2]Rajamankgala University of Technology Lanna (RMUTL), Thailand, [3]King Mongkut's University of Technology Thonburi (KMUTT), Thailand

4P-P1-31 FIRST OPERATING YEAR OF PHOTOVOLTAIC BUS STOP INSTALLED AT EDUCATIONAL THAI UNIVERSITY

S. Hiranvarodom, B. Plank-Klang and P. Apiratikul

Rajamangala University of Technology Thanyaburi (RMUTT), Thailand

4P-P1-32 THE DEVELOPMENT OF CAR'S INTERIOR AIR CONDITION SYSTEM BY THE SOLAR CELL DRIVE

T. Ito and J. Itsumi

Sojo University, Japan

4P-P1-33 The photovoltaic power generation degradation by shade in shaped-eave installation PV module and its reduction

M. Kanou, H. Kaneuchi, S. Kobayashi and T. Yachi

Tokyo University of Science, Japan

4P-P1-34 VALIDATION OF PV-HYBRID SYSTEM TECHNOLOGY AND OPERATION FOR RURAL ELECTRIFICATION IN SPAIN

X. Vallvé and A. Graillot

Trama TecnoAmbiental S.L., Spain

4P-P1-35 AN EXPERIMENTAL STUDY OF A PHOTOVOLTAIC GRID-CONNECTED SYSTEM: MODELING

N. Silsirivanich, E. Pakpairote, C. Limsakul, M. Seapan, B. Meunpinij, N. Chayavanich, A. Sangswang, D. Chenvidhya and C. Jivacate

King's Mongkut University of Technology Thonburi (KMUTT), Thailand

4P-P1-36 PERFORMANCE ANALYSIS OF FOUR 3KW GRID-CONNECTED PV SYSTEM FOR FIELD DEMONSTRATION TEST IN KOREA

J. M. Park[1], Y. O. Choi[1], B. G. Min[1], G. B. Cho[1], H. L. Baek[1] and H. W. Lim[2]

[1]Chosun University, Korea, [2]Korea Electric Testing Institute, Korea

4P-P1-37 PERFORMANCE RESULT AND ANALYSIS OF A 53KW GRID-CONNECTED PV SYSTEM FOR CHOSUN UNIVERSITY DORMITORY IN KOREA

Z. Piao, Y. Choi, N. Jeong, G. Cho and H. Baek

Chosun University, Korea

4P-P1-38 CONSTRUCTION PLAN OF 30 KW CPV POWER PLANT NEAR CENTRAIR AIRPORT

K. Araki

Daido Steel, Japan

4P-P1-39 IMPEDANCE MODELING OF A PV GRID CONNECTED SYSTEM

E. Pakpairote, D. Chenvidhya, T. Chayavanich, K. Kiratikara, A. Sangswang and N. Ruangrotsin

King's Mongkut Univertersity of Technology Thonburi (KMUTT), Thailand

4P-P1-40 STUDY OF CONTROL METHOD UNDER THE 30-MINUTE BALANCING RULE BY USING FORECAST OF IRRADIATION

M. Nishihata[1], K. Fujiwara[1], Y. Ishihara[1], T. Todaka[1], T. Funabashi[2], H. Nakashima[2] and Y. Okuno[2]

[1]Doshisha University, Japan, [2]Meidensha Corporation, Japan

4P-P1-41 ONLINE CORRECTION FOR INSOLATION FORECASTING USING WEATHER FORECAST

T. Shimada[1, 2] and K. Kurokawa[2]

[1]Hitachi, Ltd., Japan, [2]Tokyo University of Agriculture and Technology, Japan

4P-P1-42 BIFACIAL PV SYSTEM IN AICHI RINKU NEW ENERGY GENERATION PLANT

I. Araki, M. Tatsunokuchi, H. Nakahara and T. Tomita

Hitachi, Ltd., Japan

4P-P1-43 A SMART CENTRAL CONTROL SYSTEM OF ON-GRID HCPV

C. Ma[1], I. Lung[1], S. Chyou[1] and H. Lin[2]

[1]Institute of Nuclear Energy Research, Taiwan, [2]Atomtech Engineer Consultant Company Ltd., Taiwan

4P-P1-44 EVALUATION OF POWER QUALITY OF PV-GRID CONNECTED SYSTEM WITH BATTERY STORAGE UNDER LOW RADIATION

T.Chayavanich[1], J.Thongpro[2], N. Chayavanich[1], D. Chenvidhya[1], C. Jivacate[1] and K.Kirtikara[1]

[1]King Mongkut's University of Technology Thonburi (KMUTT), Thailand, [5]Rajamankgala University of Technology Lanna (RMUTL), Thailand

4P-P1-45 UTILITY INTERACTIVE PV SYSTEM WITH POWER SHAPING FUNCTION FOR INCREASING PEAK POWER CUT EFFECT

H. Heo[1], H. Kim[2], G. Choe[1], J. Kim[3] and Y. Choi[1]

[1]Kon-Kuk Univ., Korea, [2]Hanbit Co., Korea, [3]Soong-Sil Univ., Korea

4P-P1-46 THE INFLUENCE OF SOILS ON THE PHOTOVOLTAIC SYSTEM PERFORMANCE IN THE FIELD TEST PROJECT IN JAPAN

T. Oozeki[1], T. Yamada[1], K. Kato[1] and T. Yamamoto[2]

[1]National Institute of Advanced Industrial Science and Technology, Japan, [2]New Energy and Industrial Technology Development Organization (NEDO), Japan

4P-P1-47 ANALYTICAL EVALUATION OF A PV GRID-CONNECTED SYSTEM INSTALLED AT RESOURCES CENTER BUILDING IN THAILAND

S. Sangtron[1] and S. Hiranvarodom[2]

[1]Rajamangala University of Technology Lanna (RMUTL-Tak), Thailand, [2]Rajamangala University of Technology Thanyaburi (RMUTT), Thailand

4P-P1-48 RESEARCH ON THREE-DIMENSIONAL COORDINATES ACQUISITION FOR SHADOW ESTIMATION IN PHOTOVOLTAIC SYSTEM

Y. Watanabe and K. Krokawa

Tokyo University of Agriculture and Technology (TUAT), Japan

4P-P1-49 ANALYSIS OF FLUCTUATION CHARACTERISTICS OF PV SYSTEM ACCORDING TO THE ARRAY CONFIGURATION

N. Kawasaki[1], K. Kitamura[2], H. Sugihara[3], S. Nishikawa[4] and K. Kurokawa[1]

[1]Tokyo University of Agriculture and Technology, Japan, [2] MEIDENSHA CORPORATION, Japan, [3]Kandenko co., ltd, Japan, [4]Nihon University, Japan

4P-P1-50 TRANSFORMERLESS GRID CONNECTED PHOTOVOLTAIC INVERTER WITH HYSTERSIS CURRENT CONTROL

N. A. Rahim, J. Selvaraj and C. Krismadinata

University Malaya, Malaysia

4P-P1-51 DECISION METHOD OF OPTIMAL 24-HOURS SENDING VOLTAGE PROFILE IN DISTRIBUTION NETWORK WITH PV SYSTEMS

Y. Hayashi[1], Y. Hanai[1], J. Matsuki[1], Y. Fuwa[2] and K. Mori[2]

[1]University of Fukui, Japan, [2]Tokyo Electric Power Company, Japan

4P-P1-52 DESIGN, INSTALLATION AND EVALUATION OF SOLAR PV - DIESEL HYBRID SYSTEM AT LAKSHADWEEP - BANGARAM ISLAND,INDIA – A CASE STUDY

Late News C. V. S. N. Murty and S. Lokabhiraman

Bharat Heavy Electricals Ltd., India

4P-P1-53 VILLAGE ELECTRIFICATION THROUGH A OFF-GRID SOLAR PV (SPV) POWER PLANT - A SUCCESSFUL MODEL FOR RURAL INDIA

Late News C. V. S. N. Murty and B. N. Ramesh

BHEL, India

4P-P1-54 NON LINEAR CONTROL OF A PHOTOVOLTAIC PUMPING SYSTEM

Late News R. Andoulsi[1], A. Sellami[1], B. Khiari[1], A. Mami[2] and G. Dauphin-Tanguy[3]

1Research and Technology Centre of Energy, Tunisia, 2ENIT, Tunisia, 3Ecole Centrale de Lille, France

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4P-P1-55 INVERTER CONTROL FOR SINGLE-STAGE SINGLE-PHASE PHOTOVOLTAIC GRID-CONNECTED SYSTEM

Late News H. Xiang[1], Y. Yan[1] and H. Jiang[2]

1Nanjing University of Aeronautics & Astronautics, China, 2Shanghai Aviation Electric Co., Ltd, China

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4P-P1-56 PERFORMANCE OF A GRID CONNECTED SOLAR HYDROGEN PV SYSTEM IN MALAYSIA

Late News T. Marnoto, W. R. W. Daud, K. Sopian, R. Zulkifli, M. N. Ab Rahman, M. AlGhoul and N. Amin

Universiti Kebangsaan Malaysia, Malaysia

4P-P1-57 EVALUATION METHOD OF PERFPRMANCE AND ECONOMICS OF CLUSTERED PV SYSTEM (1)

Late News S. Nishikawa[1] and H. Suguhara[2]

1Nihon University, Japan, 2Kandenko co., ltd., Japan

4P-P1-58 FORECASTING METHOD OF TIME SERIES OF SOLAR ENERGY BY USING WIDE METEOROLOGICAL DATA

Late News K. Ichiyanagi[1], K. Taniguchi[1], H. Nakano[1], K. Yukita[1], Y. Goto[1], F. Yamada[2], N. Yamamoto[2] and S. Sugimoto[2]

[1]Aichi Institute of Technology, Japan, [2]Chubu Electric Power Co., Inc., Japan

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Poster Session 2

December 4th, Tuesday 16:00-17:30 Room: Poster II (5th Floor)

Area 3: Crystalline Silicon Solar Cells and Technologies

4P-P2-01 EVALUATION OF THE OHMIC PROPERTIES OF THE SILVER METAL CONTACTS FORMED ON THE MULTICRYSTALLINE SILICON SOLAR CELLS

P. N. Vinod

Naval Physical and Oceanographic Laboratory, India

4P-P2-02 THE MATCHING INVESTIGATION OF DEPOSITED PRESSURE AND ANNEALING TEMPERATURE OF SiN_x:H ANTIREFLECTION FILMS

C. Liu, T. Gong, X. Yuan, R. Xu, X. Huang and L. Wang

Shanghai Solar Energy Science & Technology Co.,Ltd, China

4P-P2-03 SPHELAR® PANEL AS A FAÇADE ELEMENT

H. Sugimura[1], H. Nakamura[1], T. Matsumoto[1], S. Poulsen[2], H. Lauritzen[2], J. Christoffersen[3], K. Taira[1], E. Omura[1], I. Inagawaa[1] and J. Nakata[1]

[1]Kyosemi Corporation, Japan, [2]Danish Technological Institute, Denmark, [3]Danish Building Research Institute, Denmark

4P-P2-04 P-TYPE EMITTER EPITAXY ON N-TYPE SILICON WAFER

E. Schmich, H. Lautenschlager and S. Reber

Fraunhofer Institute for Solar Energy Systems, Germany

4P-P2-05 A SOLUTION-PREPARED SURFACE TEXTURE FOR SOLAR CELLS

M. Tao, W. Zhou, H. Yang and K. Han

University of Texas at Arlington, USA

4P-P2-06 BORON DOPED SILICON OXIDE FILMS FOR USE AS LOCAL BACK SURFACE FIELD IN CAST POLYCRYSTALLINE SILICON SOLAR CELLS

A. Limmanee[1], T. Sugiura[1], H. Yamamoto[1], T. Sato[2], S. Miyajima[1], A. Yamada[1] and M. Konagai[1]

[1]Tokyo institute of Technology, Japan, [2]Mitsubishi Electric Corporation, Japan, [3]Tokyo Institute of Technology, Japan

4P-P2-07 EVALUATION OF SILICON SOLAR PANEL'S ELECTRICAL PARAMETERS IN DIFFERENT ENVIRONMENTAL CONDITIONS USING A COMPREHENSIVE MEASURMENT SYSTEM

M. Taherbaneh[1,3], H. Ghafori Fard[2], A. H. Rezaie[3], O. Shekoofa[4] and S. Karbasian[4]

[1]Iranian Space Agency, Iran, [2]Imam Khomeini International University, Iran, [3]Amirkabir University of Technnology, Iran, [4]Iran Telecommunication Research Center, Iran

4P-P2-08 DENSITY OF INTERFACE STATES AT THE SILICON-SILICON DIOXIDE INTERFACE OF TEXTURED SILICON WITH RANDOM PYRAMIDS

L. P. Johnson and K. R. McIntosh

Australian National University, Australia

4P-P2-09 FABRICATON OF BOWING RELEASED THIN CRYSTALLINE SILICON SOLAR CELLS WITH SCREEN-PRINTED CONTACTS

D. Lee, J. Kim, H. Park, J. You and J. Jeong

LG Chem. Ltd./Research Park, Korea

4P-P2-10 DESIGN OF A REFLECTED LIGHT MEASURING APPARATUS FOR LBIC MEASUREMENT OF CRYSTALLINE SOLAR CELLS

K. Lin, Y. Chiang, Y.Liu, L. Cheng, C. Liu and Y. Chang

ITRI, Industrial Technology Research Institute, Taiwan

4P-P2-11 INFLUENCE OF ACIDIC TEXTURISING CONDITIONS ON ANTI-REFLECTION COATING PROCESS AND MUTI-CRYSTALLINE SILICON SOLAR CELL PERFORMANCE

J. Ahn, J. Cheong, D. Lee, Y. Do, S. Lee and J. Jeong

LG Chem, Ltd./ Research Park, Korea

4P-P2-12 A OPTIMIZATION OF ANTI-REFLECTION COATINGS ON CRYSTALLINE SILICON SOLAR CELLS WITH GLASS ENCAPSULATION

J. Ahn, H. Park, S. Lee and J. Jeong

LG Chem, Ltd./ Research Park, Korea

4P-P2-13 THE EVALUATION OF THE BULK AND THE SURFACE PASSIVATION EFFECTS FOR MULTI-CRYSTALLINE SILICON SOLAR CELL

Y. Kurimoto, H. Mizukami, S. Ooka, Y. Takaba, Y. Yamamoto and S. Okamoto

SHARP Corp., Japan

4P-P2-14 HIGH PRESSURE WATER VAPOR HEAT TREATMENT FOR THE PASSIVATION OF POLYCRYSTALLINE SILICON THIN FILM SOLAR CELLS

A. Ogane, Y. Takahashi, A. Kitiyanan, Y. Uraoka and T. Fuyuki

Nara Institute of Science and Technology (NAIST), Japan

4P-P2-15 A NEW METHOD FOR THE PRODUCTION OF ULTRA-THIN CRYSTALLINE SI WAFERS

F. Dross[1], A. Milhe[1,2], J. Robbelein[1], I. Gordon[1], P. O. Bouchard[2], G. Beaucarne[1] and J. Poortmans[1]

[1]IMEC, v.z.w., Belgium,[2]Ecole des Mines de Paris (CEMEF), France

4P-P2-16 DETECTION OF CRACK LOCATION IN MULTICRYSTALLINE SILICON SOLAR CELLS BY ELECTROLUMINESCENCE IMAGE SUBTRACTION TECHNIQUE

A. Kitiyanan[1], K. Bothe[2], Y. Takahashi[1], A. Ogane[1] and T. Fuyuki[1]

[1]Nara Institute of Science and Technology (NAIST), Japan,[2]Institut für Solarenergieforschung GmbH Hameln/Emmerthal (ISFH), Germany

4P-P2-17 FABRICATION OF ELECTRODE GROOVES ON SILICON SOLAR CELL USING SURFACE DISCHARGE

T. Hamada, S. Arakawa, T. Sakoda and M. Otsubo

University of Miyazaki, Japan

4P-P2-18 SIMULATED DESIGN DIAGRAMS FOR A ONE – DIMENSIONAL SOLAR CELL

K. Breh, S. Shaie and M. Almotawakel

Sana'a University, Republic of Yemen

4P-P2-19 INKJET PRINTING FOR HIGH DEFINITION INDUSTRIAL MASKING PROCESSES FOR SOLAR CELL PRODUCTION

D. Biro[1], D. Erath[1], U. Belledin[1], J. Specht[1], D. Stüwe[1], A. Lemke[1], M. Aleman[1], N. Mingirulli[1], J. Rentsch[1], R. Preu[1], R. Schlosser[2], B. Bitnar[3] and H. Neuhaus[3]

[1]Fraunhofer Institute for Solar Energy Systems (ISE), Germany,[2]SolarWorld Industries Deutschland, Germany,[3]Deutsche Cell GmbH, Germany

4P-P2-20 IMPROVED TRANSFER PROCESS USING SELECTIVE ELECTROCHEMICAL ETCHING

O. Tobail, M. Reuter, S. Eisele and J. H. Werner

University of Stuttgart, Germany

4P-P2-21 SPUTTERED PHOSPHOROUS PRECURSORS FOR LASER DOPING

S. Eisele, G. Bilger, M. Ametowobla, J. R. Köhler and J. H. Werner

Institut für Physikalische Elektronik, Germany

4P-P2-22 HETEROJUNCTION SOLAR CELLS (A-SI/C-SI) PASSIVATED USING HYDROGENATED AMORPHOUS SILICON SUBOXIDE FILMS

T. Mueller[1], S. Schwertheim[1], Y. Huang[2], M. Scherff[1] and W. R. Fahrner[1]

[1]University of Hagen, Germany,[2]Forschungszentrum Juelich GmbH, Germany

4P-P2-23 EVALUATION OF INTERFACE DEFECTS IN A-SI:H/MC-SI HETEROJUNCTION SOLAR CELLS

W. R. Fahrner, M. Scherff, T. Mueller and S. Schwertheim

University of Hagen, Germany

4P-P2-24 SLURRIES FOR MULTI WIRE SAWING - AN EPERIMENTAL APPROACH -

M. Schumann, M. Bergmann, F. Haas, T. Orellana, K. Mayer and A. Eyer

Fraunhofer ISE, Germany

4P-P2-25 FUNCTION OF FRONT SURFACE FIELD IN N-TYPE HIGH-EFFICIENCY BACK-JUNCTION BACK-CONTACT SILICON SOLAR CELLS

F. Granek, C. Reichel, M. Hermle, O. Schultz and S. Glunz

Fraunhofer ISE, Germany

4P-P2-26 NOVEL APPROACHES OF TRI-CRYSTALLINE SILICON SURFACE TEXTURING

K. Han[1], M. Ju[1,2], Y. Kim[1], I. Moon[1], K. Lee[1,2], S. Han[1,2], H. Kim[2], K. Kim[1], N. Lakshminarayan[1] and J. Yi[1]

[1]Sungkyunkwan University, Korea,[2]KPE Ins., Korea

4P-P2-27 SELECTIVE EMITTER USING POROUS SILICON FOR CRYSTALLINE SILICON SOLAR CELLS

I. Moon[1], Y. Kim[1], K. Han[1], D. Ai[1], J. Lee[1], M. Ju[2], K. Lee[2], H. Kim[2], K. Kim[1], N. Lakshminarayan[1,3] and J. Yi[1]

[1]Sungkyunkwan University, Korea,[2]KPE Ins., Korea,[3]Madras Christian College, India

4P-P2-28 NOVEL INKJET INKS TOWARDS NON-CONTACT PRINTING OF SILICON SOLAR CELLS

O. Khaselev, N. Desai, S. Devarajan, M. Boureghda, A. Lifton, S. Chatterjee, M. Marczi and B. Singh

Cookson Electronics, USA

4P-P2-29 ANTIREFLECTION SUBWAVELENGTH STRUCTURE FORMED BY WET PROCESS USING NANO PARTICLES OF NOBLE METAL CATALYST

K. Nishioka[1], S. Horita[1], K. Ohdaira[1], H. Matsumura[1], Y. Takahashi[2] and T. Fuyuki[2]

[1]Japan Advanced Institute of Science and Technology, Japan, [2]Nara Institute of Science and Technology, Japan

4P-P2-30 COMPARISON OF VARIOUS BACK SIDE STRUCTURES FOR IMPROVING EFFICIENCY OF CRYSTALLINE SILICON SOLAR CELLS

M. S. Jeon, P. Supajariyawichai, K. Kawachi, H. Fukaya, M. Dhamrin and K. Kamisako

Tokyo University of Agriculture and Technology, Japan

4P-P2-31 CHARACTERIZATION OF HETEROJUNCTIONS IN CRYSTALLINE SILICON BASED SOLAR CELLS BY INTERNAL PHOTOEMISSION

I. Sakata, M. Yamanaka and H. Kawanami

National Institute of Advanced Industrial Science and Technology (AIST), Japan

4P-P2-32 SILICON NITRIDE INDUCED HYDROGENATION OF SILICON/SILICON OXIDE INTERFACES FOR REAR SURFACE PASSIVATION OF INDUSTRIAL-TYPE THIN SOLAR CELLS

H. F. W. Dekkers, G. Agostinelli, Y. Ma and G. Beaucarne

IMEC vzw, Belgium

4P-P2-33 ALTERNATIVES TO SCREEN PRINTING FOR THE FRONT SIDE METALLIZATION OF SILICON SOLAR CELLS

M. Alemán, N. Bay, A. Knorz, A. Grohe and S. W. Glunz

Fraunhofer Institute for Solar Energy Systems, Germany

4P-P2-34 INKJET PRINTING FOR HIGH EFFICIENCY SILICON SOLAR CELL STRUCTURES

R. Utama, A. Lennon, A. Ho-Baillie, M. Lenio, N. Borojevic and S. Wenham

UNSW, Australia

4P-P2-35 EFFECT OF ANNEALING TEMPERATURE ON A-SI:H FILMS FOR HETEROJUNCTION SOLAR CELLS

K. Kawachi, M. S. Jeon, M. Dhamrin, K. Kamisako

Tokyo University of Agriculture & Technology, Japan

4P-P2-36 REAR SIDE OHMIC CONTACTS FOR THIN SI SOLAR CELLS

H. Fukaya, M. S. Jeon, M. Dhamrin and K. Kamisako

Tokyo University of Agriculture & Technology, Japan

4P-P2-37 QUALITY IMPROVEMENT OF MULTICRYSTALLINE SILICON WAFERS BY BORON-GETTERING

A. Uzum[1], M. Dhamrin[1], T. Saitoh[1], K. Kamisako[1] and I. Yamaga[2]

[1]Tokyo Univ. of Agr. & Tech., Japan, [2]Dai-ichi Kiden Corp., Japan

4P-P2-38 DEPOSITION AND EVALUATION OF PASSIVATION FILMS FOR Si SOLAR CELLS BY RPECVD METHOD

Y. Suzuki, S. Maeda, M. Dhamrin, M. Suda and K. Kamisako

Tokyo University of Agriculture and Technology, Japan

4P-P2-39 PHOTON CONVERTERS FOR THIN BIFACIAL SILICON SOLAR CELLS

A. C. Pan, C. del Cañizo, I. Tobías and A. Luque

Universidad Politécnica de Madrid, Spain

4P-P2-40 LARGE AREA TRI-CRYSTALLINE SILICON SOLAR CELL ETCHED BY ALKALIC SOLUTION

Y. Kim[1], K. Han[1], I. Mun[1], K. Kim[1], H. Kim[2], K. Lee[1,2], S. Han[2], M. Joo[1,2] and J. Yi[1,2].

[1]Sungkyunkwan University, Korea, [2]KPE ins., Korea

4P-P2-41 A MODEL FOR PREDICTING THE BOWING EFFECTS OF THIN SILICON SOLAR CELLS

F. Lin, F. Yeh, M. Lin and H. Hsieh

Industrial Technology Research Institute, Taiwan

4P-P2-42 EFFECTIVE MINORITY CARRIER LIFETIME OF CRYSTALLINE SILICON WAFER WITH DIFFERENT SURFACE TREATMENT AND PASSIVATION LAYERS

D. Jeong[1], J. Lee[1], Y. Kim[4], J. Yi[4], M. Kang[2], Y. Ok[2], S. Kim[3], D. Kim[2], K. Yoon[1] and J. Song[1]

[1]Korea Institute of Energy Research, Korea,[2]Korea University, Korea,[3]Gwangju Institute of Science and Technology, Korea,[4]School of Information & Communication Engineering, Korea

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4P-P2-43 ROLE OF LEAD OXIDE ON THE FORMATION OF SILVER PRECIPITATES IN SCREEN PRINTED SILVER CONTACTS FOR SILICON SOLAR CELLS

K. Hong[1], S. Cho[1], J. Huh[1], J. You[2] and J. Jong[2]

[1]Korea University, Korea,[2]LG Chem, Ltd. Research Park, Korea

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4P-P2-44 MICROSCOPIC HOMOGENEITY OF EMITTERS FORMED USING IN-LINE DIFFUSION AND SPRAYED PHOSPHORIC ACID AS THE DOPANT SOURCE

C. Voyer[1], T. Buettner[1], R. Bock[2], D. Biro[1] and R. Preu[1]

[1]Fraunhofer Institute for Solar Energy Systems ISE, Germany,[2]Institute for Solar Energy Research in Hameln/Emmerthal (ISFH), Germany

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4P-P2-45 HETEROJUNCTION CRYSTALLINE SILICON SOLAR CELLS WITH A WIDEGAP HYDROGENATED NANOCRYSTALLINE SILICON CARBIDE WINDOW LAYER DEPOSITED BY VHF-PECVD

S. Miyajima, A. Yamada and M. Konagai

Tokyo Institute of Technology, Japan

4P-P2-46 SCREEN-PRINTED ELECTRODE: POSSIBILITY INSPECTION FOR SUPER THIN SUBSTRATE AND HIGH-EFFICIENCY MULTI-CRYSTALLINE SILICON SOLAR CELLS

S. Okamoto, K. Wada, Y. Takaba, R. Ozaki and R. Mikami

SHARP CORPORATION, Japan

4P-P2-47 LASER RECRYSTALLIZATION FOR SELECTIVE EMITTER IN SILICON SOLAR CELLS

J. You, J. Kim, D. Lee, H. Lee, H. Park and J. Jeong

LG Chem. Ltd./Research Park, Korea

4P-P2-48 DEVELOPMENT OF FRONT CONTACT INK FOR SHALLOW EMITTERS

T. Pham, C. Khadilkar, S. Kim, N. Merchant, S. Sridharan and A. Shaikh

Ferro Corporation, USA

4P-P2-49 PREPARATION AND CHARACTERISATION OF SiN_X:H COMPLEX ANTIREFLECTION LAYERS ON POLYCRYSTALLINE SILICON SOLAR CELLS

Q. Ban, F. Yun, Y. Tang and X. Wang

Solarfun Power Holdings Co., China

4P-P2-50 EFFECT OF FIXED CHARGES IN A-SiN_X:H FILMS ON SURFACE PASSIVAION OF CRYSTALLINE SILICON

S. Ishikawa[1], K. Fukuda[1], H. Sai[2], K. Arafune[1], Y. Ohshita[1] and M. Yamaguchi[1]

[1]Toyota Technological Institute, Japan,[2]Advanced Industrial Science and Technology, Japan

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4P-P2-51 PURIFICATION OF METALLURGICAL-GRADE SILICON BY A HYBRID PYRO- AND HYDRO-METALLURGICAL PROCESS

Late News

S. Tsao[1], D. Xiao[2], F. Fong[2] and C. Hu[1]

[1]National Tsing Hua University, Taiwan,[2]Industrial Technology Research Institute, Taiwan

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4P-P2-52 SURFACE TEXTURING OF SILICON USING ZENON DIFLUORIDE

Late News

H. Takato and I. Sakata

National Institute of Advanced Industrial Science and Technology (AIST), Japan

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4P-P2-53 MINORITY CARRIER DYNAMICS IN POLYCRYSTALLINE SILICON SOLAR CELLS STUDIED BY PHOTO-ASSISTED KELVIN PROBE FORCE MICROSCOPY

Late News

M. Takihara[1], T. Ujihara[2] and T. Takahashi[1]

[1]University of Tokyo, Japan,[2]Nagoya University, Japan

Poster Session 3

December 5th, Wednesday 11:00-12:30 Room: Poster I (5th Floor)

Area 5: CIGS, II-VI and Related Thin Films and Cells / Area 8: PV Programs, Industries, Market, and Environment

Area 5

5P-P3-01 EFFECTS OF Na CONTENT ON THE $Mo(Se,S)_2$ FORMATION IN CIGSeS THIN-FILM SOLAR CELLS

V. V. Hadagali[1], N. G. Dhere[1] and H. H. Heinrich[2]

[1]Florida Solar Energy Center, USA, [2]Advanced Materials Processing and Analysis Center, USA

5P-P3-02 $CU(IN,GA)(S,SE)_2$ THIN FILMS PREPARED BY SEQUENTIAL EVAPORATION FROM TERNARY AND BINARY COMPOUNDS

T. Yamaguchi[1], A. Yoshida[1], Y. Taniguchi[1], K. Numata[1], S. Niiyama[2] and T. Imanishi[2]

[1]Wakayama College of Technology, Japan, [2]Wakayama Industrial Technology Center, Japan

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5P-P3-03 CHARACTERIZATION OF EVAPORATED CUINS2 FILMS ANNEALED IN HYDROGEN SULFIDE ATMOSPHERE

Y. Akaki[1], K. Nomoto[2], S. Nakamura[3], T. Yoshitake[2] and K. Yoshino[4]

[1]Miyakonojo National College of Technology, Japan, [2]University of Kyushu, Japan, [3]Tsuyama National College of Technology, Japan, [4]University of Miyazaki, Japan

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5P-P3-04 MICROSTRUCTURAL PROPERTIES OF $(IN, GA)_2SE_3$ PRECURSOR LAYERS FOR EFFICIENT CIGS THIN FILM SOLAR CELLS

T. Mise and T. Nakada

Aoyama Gakuin University, Japan

5P-P3-05 CRYSTAL GROWTH PROMOTION OF $CUINSE_2$ ON POLYIMIDE FILM BY RAPID THERMAL ANNEALING

K. Nomura, K. Tanaka, T. Minemoto and H. Takakura

Ritsumeikan University, Japan

5P-P3-06 INFLUENCE OF PULSED-LASER IRRADIATION ON CIGS THIN FILMS AND SOLAR CELLS

Y. Uchida1, N. Kawamura2, J. Noguchi2, T. Mise2, S. Shirakata3 and T. Nakada2

[1]Teikyo Univ. of Sci. and Tech., Japan, [2]Aoyama Gakuin University, Japan, [3]Ehime University, Japan

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5P-P3-07 $CuInSe_2$ THIN FILM PREPARATION THROUGH A NEW SOLUTION BASED SELENISATION PROCESS

M. Kauk, M. Altosaar, L. Kaupmees and M. Grossberg

Tallinn University of Technology, Estonia

5P-P3-08 PREPARATION OF CIS ABSORBER LAYER FOR SOLAR CELLS BY NON-VACUUM PROCESS

K. Kim[1], R. B. V.Chalapathy[2], S. Ahn[3], K. Yoon[3] and B. Ahn[2]

[1]Youl Chon Chemical Co., Ltd, Korea, [2]Korea Advanced Institute of Science and Technology, Korea, [3]Korea Institute of Energy Research, Korea

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5P-P3-09 SYNTHESIS AND CHARACTERIZATION OF HIGH-QUALITY CUINS2 AND $CUINS_2$/ZNS (CORE/SHELL) LUMINESCENT NANOCRYSTALS

K. Kuo[1], S. Chen[1] and B. Cheng[2]

[1]National Chiao Tung University Hsinchu, Taiwan, [2]National Synchrotron Radiation Research Center, Taiwan

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5P-P3-10 SOLVOTHERMAL SYNTHESIS OF CUINSE2 AND CUINS2 NANOPARTICLES FROM BINARY COMPOUND

Y. Liao and C. Ting

Industrial Technology Research Institute, Taiwan

5P-P3-11 STUDY OF $CUINS_2$ THIN FILMS BY VACUUM ANNEALING TIMES MANUFACTURALED FOR APPLICATION IN SOLAR CELL

H. Yang and G. Park

Mokpo National University, Korea

5P-P3-12 EVALUATION OF CHALCOPYRITE I-III-VI_2 POWDERS PREPARED BY BALL-MILLING PROCESS

H. Miyazaki, M. Kubori, Y. Okamoto and J. Morimoto

National Defense Academy, Japan

5P-P3-13 SOLVOTHERMAL SYNTHESIS OF COPPER INDIUM DISELENIDE WITH FACILE SOLUTION ROUTE

J. Chang, H. Nam, J. Han and D. Jung

Sungkyunkwan University, Korea

5P-P3-14 GROWTH CUINGASE CHALCOPYRITE STRUCTURE BY MAGNETRON SPUTTERING WITH ALLOY PRECURSOR

Y. C. Shih[1], G. S. Chen[1] and T. R. Huang[2]

[1]Feng-Chia University, Taiwan, [2]PVT Solar Inc, Taiwan

5P-P3-15 PHOTOLUMINESCENCE STUDY OF CIGS THIN FILMS GROWN BY MECANOCHEMICAL PROCESS

Y. Chiba[1], A. Yamada[1], M. Konagai[1], Y. Matsuo[2] and T. Wada[2]

[1]Tokyo Institute of Technology, Japan, [2]Ryukoku University, Japan

5P-P3-16 COMPOSITIONAL DEPENDENCE OF RAMAN SCATTERING AND PHOTOLUMINESCENCE EMISSION IN CU-GA-SE FILMS GROWN BY MOCVD

M. Grossberg[1], J. Krustok[1], S. Siebentritt[2] and J. Albert[3]

[1]Tallinn University of Technology, Estonia, [2]Université du Luxembourg, Luxembourg, [3]Hahn-Meitner Institut, Germany

5P-P3-17 BIFACIAL CIGS THIN FILM SOLAR CELLS USING HIGH MOBILITY Ti-DOPED In_2O_3 BACK CONTACTS

T. Miyano, R. Hashimoto, Y. Kanda, T. Mise and T. Nakada

Aoyama Gakuin University, Japan

5P-P3-18 FABRICATION OF A $CuInSe_2$ *pn* JUNCTION PREPARED BY THERMAL DIFFUSION OF Zn USING DIMETHYLZINC

A. Miyama[1], T. Yasuniwa[1], A. Umezawa[1], H. Nakanishi[1], M. Sugiyama[1] and S. F. Chichibu[2]

[1]Tokyo University of Science, Japan, [2]Tohoku University, Japan

5P-P3-19 CIGS SOLAR CELLS ON STAINLESS STEEL SUBSTRATES COVERED WITH ZNO DIFFUSION BARRIERS

C. Shi, Q. He, F. Li, J. Zhao, Y. Jiang, Z. Zhou, B. Li, T. Yu, C. Li and Y. Sun

Nankai University, China

5P-P3-20 THE GROWTH OF MOLYBDENUM THIN FILMS WITH LOW RESISTIVITY AND LOW RESIDUAL STRESS BY DC-MAGNETRON SPUTTERING

K. Lee, S. Yoon, T. Yoon, S. Yoon and J. Ha

LG Chem, Ltd./Research Park, Korea

5P-P3-21 REDUCTION OF HETEROINTERFACE RECOMBINATION BY $ZN_{1-X}MG_XO$ FOR WINDOW LAYER OF $CU(IN,GA)SE_2$ SOLAR CELLS

K. Tanaka, T. Minemoto and H. Takakura

Ritsumeikan University, Japan

5P-P3-22 PREPARATION AND CHARACTERIZATION OF ZnS THIN FILMS ON SnO2/GLASS FOR THE BUFFER LAYER OF CIGS SOLAR CELLS BY THE CHEMICAL BATH DEPOSITION METHOD WITH SELF-CATALYST GROWTH PROCESS

T. Iwashita and S. Ando

Tokyo University of Science, Japan

5P-P3-23 ELECTRONIC STRUCTURES OF CUINSE2 AND THE RELATED COMPOUNDS CALCULATED BY FIRST-PRINCIPLES SCREENED-EXCHANGE LDA METHOD

T. Maeda and T. Wada

Ryukoku University, Japan

5P-P3-24 NUMERICAL ANALYSIS OF THICKNESS AND TEMPERATURE EFFECT ON COPPER-INDIUM-SELENIUM (CIS) BASED SOLAR CELLS WITH VARIOUS BUFFER LAYERS

N. Amin[1], M. Tang[2] and K. Sopian[1]

[1]National University of Malaysia, Malaysia, [2]Multimedia University, Malaysia

5P-P3-25 IMPACTS OF BAND ALIGNMENT ON PERFORMANCE OF $Cu(In,Ga)Se_2$ SOLAR CELLS

C. Huang

National Dong Hwa University, Taiwan

5P-P3-26 2-D DEVICE MODELLING AND FINITE ELEMENT SIMULATIONS FOR THIN-FILM SOLAR CELLS

U. Malm and M. Edoff

Uppsala University, Sweden

5P-P3-27 PREPARATION OF Cu_2ZnSnS_4 THIN FILMS BY SULFURIZING ELECTROPLATED PRECURSORS

H. Araki, Y. Kubo, A. Mikaduki, K. Jimbo, W. S. Maw, H. Katagiri, M. Yamazaki, K. Oishi and A. Takeuchi

Nagaoka National College of Technology, Japan

5P-P3-28 STRUCTURE AND PROPERTIES OF $Cu(InAl)Se_2$THIN FILMS GROWN BY RF MAGNETRON SPUTTERING

B. Munir[1,2], R. A. Wibowo[2] and K. Kim[2]

[1]University of Indonesia, Indonesia, [2]Yeungnam University, Korea

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5P-P3-29 EFFECT OF COMPOSITIONAL RATIO ON PROPERTIES OF CU_2ZNSNS_4 THIN FILM FABRICATED BY CO-EVAPORATION

T. Tnaka, K. Ikari, M. Nishio, Q. Guo and H. Ogawa

Saga University, Japan

5P-P3-30 PREPARATION OF CU_2ZNSNS_4 THIN FILMS BY ANNEALING FROM $ZN/SNS_2/CU_2S$ STACKED LAYER IN SULFUR ATMOSPHERE

T. Yamaguchi[1], K. Maeda[1], T. Kubo[1], S. Niiyama[2], T. Imanishi[2] and A. Wakahara[3]

[1]Wakayama College of Technology, Japan, [2]Wakayama Industrial Technology Center, Japan, [3]Toyohashi University of Technology, Japan

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5P-P3-31 STRUCTURE, ELECTRICAL AND OPTICAL PROPERTIES OF $Cu_2ZnSnSe_4$ THIN FILM PREPARED BY PULSED LASER DEPOSITION

M. Yoon , R. A. Wibowo, B. Munir and K. Kim

Yeungnam University, Korea

5P-P3-32 STOICHIOMETRIC CONTROL OF STANNITE-QUATERNARY $CU_2ZNSNSE_4$ THIN FILMS BY SPUTTERING METHOD

K. Kim, M. Yoon and R. A. Wibowo

Yeungnam University, Korea

5P-P3-33 STRUCTUAL AND OPTICAL CHARACTERIZATION OF $AgGaSe_2$ BULK CRYSTALS BY CHANGING Ag/Ga COMPOSITIONS.

A. Kinoshita[1], S. Shirahata[1], K. Yoshino[1], T. Ikari[1], H. Matsuo[2], K. Kakimoto[2] and S. Seto[3]

[1]Miyazaki Univ., Japan, [2]Kyusyu Univ., Japan, [3]Ishikawa National coll. Tech., Japan

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5P-P3-34 PREPARATION AND PROPERTIES OF $CuAlSe_2$ THIN FILMS

G. Cheng and B. Tseng

National Sun Yat-Sen University, Taiwan

5P-P3-35 QUANTITATIVE ANALYSIS OF CELL TRANSPARENCY AND ITS IMPLICATIONS FOR THE DESIGN OF CHALCOPYRITE-BASED TANDEMS

M. Schmid[1], R. Klenk[2] and M. Ch. Lux-Steiner[1, 2]

[1]Freie Universität Berlin, Germany, [2]Hahn-Meitner-Institut Berlin, Germany

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5P-P3-36 CHEMICAL ETCHING OF $Cu_2ZnSnSe_4$ MONOGRAIN POWDER

K. Timmo, M. Altosaar, J. Raudoja, K. Kerm, M. Grossberg and E. Mellikov

Tallinn University of Technology, Estonia

5P-P3-37 HIGH-MOBILITY Ti-DOPED IN_2O_3 (ITiO) THIN FILMS DEPOSITED BY SPUTTERING/POST-ANNEALING TECHNIQUE

R. Hashimoto[1], Y. Kanda[1], Y. Abe[2] and T. Nakada[1]

[1]Aoyama Gakuin University, Japan, [2]Sumitomo Metal Mining Co., Ltd., Japan

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5P-P3-38 NIOBIUM-DOPED ANATASE TITANIUM OXIDE TRANSPARENT CONDUCTING FILMS

N. Yamada[1], N. L. H. Hoang[1, 2], J. Kasai[1], T. Hitosugi[1, 2], T. Shimada[1, 2] and T. Hasegawa[1, 2]

[1]Kanagawa Academy of Science and Technology (KAST), Japan, [2]University of Tokyo, Japan

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5P-P3-39 ANNEALING EFFECTS OF ELECTRICAL CHARACTERIZATION ON ZnO THIN FILMS

S. Oyama[1], M. Kato[1], M. Oshima[1], K. Yoshino[1], T, Ikari[1] and M. Yoneta[2]

[1]University of Miyazaki, Japan, [2]Okayama University of Science, Japan

5P-P3-40 OPTICAL PROPERTY OF IN-DOPED MGZNO/GLASS TOWARD TRANSPARENT CONDUCTIVE OXIDE MATERIALS

M. Shintani[1], M. Yoneta[1], K. Yoshino[2], M. Li[1], Y. Sato[1], M. Ohishi[1] and K. Ohmori[1]

[1]Okayama University of Science, Japan, [2]Miyazaki University, Japan

5P-P3-41 TRANSEPARENT ZNO THIN FILM PRIPARATION BY ANODIZATION

S. Nakamura and Y. Okamoto

Tsuyama National College of Technology, Japan

5P-P3-42 PHOTOCONDUCTIVITY OF SOLUTION-PROCESSED MERCURY TELLURIDE NANOPARTICLE THIN FILMS FABRICATED ON GLASS SUBSTRATES

H. Seong, K. Cho and S. Kim

Korea University, Korea

5P-P3-43 EFFECT OF $CdCl_2$ TREATMENT ON STRUCTURE AND PHOTOLUMINESCENCE OF CdTe FILMS WITH DIFFERENT COMPOSITIONS FABRICATED BY CMBD

T. M. Razykov[1,3], G. Contreras-Puente[2], G. C. Chornokur[3], M. Dybjec[3], Yu. Emirov[3], B. Ergashev[1], C. S. Ferekides[3], D. Y. Goswami[3], A. Hubbimov[1], B. Ikramov[1], K. M. Kouchkarov[1], X. Mathew[4], D. Morel[3], S. Ostapenko[3] , E. Sanchez-Meza[2], E. Stefanakos[3] , O. Vigil-Galan[2] , Yu. V. Vorobiev[5] and H. Zhao[3]

[1]Physical-Technical Institute, Uzbekistan, [2]National Polytechnic Institute, Mexico, [3]University of South Florida, USA, [4]CIE-UNAM, Mexico, [5]CINVESTAV, IPN, Mexico

5P-P3-44 BAND GAP ENGINEERING OF RF SPUTTERED CUINZNSE2 THIN FILMS FOR INDIUM-REDUCED THIN FILM SOLAR CELL APPLICATION

R. A. Wibowo and K. Kim

Yeungnam University, Korea

5P-P3-45 SYNTHESIS OF NANOSTRUCTURED CADMIUM SULFIDE TEMPLATED BY MESOPOROUS SILICA BY ELECTRODEPOSITION

K. Kim, H. Noh, J. Lee and D. Kim

Korea University, Korea

5P-P3-46 8 MEV ELECTRON IRRADIATION STUDIES ON THE CDTE /CDS SOLAR CELLS

U. P. Singh

KIIT University, India

5P-P3-47 PREPARATION AND CHARACTERIZATION OF (CU,AG)INSE2 FILMS BY A COMBINATION OF MECHANOCHEMICAL AND SCREEN PRINTING/SINTERING

S. Nomura[1], Y. Matsuo[1], T. Wada[1,] Y. Chiba[2], A. Yamada[3] and M. Konagai[2]

[1]Ryukoku University, Japan, [2]Tokyo Institute of Technology, Japan, [3]Tokyo Institute of Technology, Japan

5P-P3-48 A STUDY ON PROPERTIES OF CUINSE2 THIN FILMS BY SUBSTRATE TEMPERATURE AND ANNEALING TEMPERATURE

Late News

H. Yang, Y. Kim, W. Jeong and G. Park

Mokpo National Univ., Korea

5P-P3-49 PREPARATION AND PERFORMANCE OF THIN FILM CDTE MINI-MODULE

Late News

J. Zhang, L. Feng, Z. Lei, Y. Cai, W. Li, L. Wu, B. Li, W. Cai and J. Zheng

Sichuan University, China

5P-P3-50 THE FERROMAGTISM AND INTERMEDIATE BAND STRUCTURE OF AN IRON IMPLATNED DOPED CUINSE2 THIN FILM

Late News

C. Lee[1], L. Liu[1] and B. Tseng[2]

1National Tsing Hua University, Taiwan, 2National Sun Yat-Sen University, Taiwan

5P-P3-51 RENEWABLE ENERGY GRID INTEGRATION – DISTRIBUTED PHOTOVOLTAIC STUDIES

D. Ton[1], B. Kroposki[2], R. Margolis[2], J. Torres[3], G. Kuswa[3] and T. Key[4]

[1]US Department of Energy, USA, [2]National Renewable Energy Laboratory, USA, [3]Sandia National Laboratories, USA, [4]Electric Power Research Institute, USA

5P-P3-52 ELECTRIC UTILITY METERING AND INTERCONNECTION POLICIES FOR PHOTOVOLTAIC SYSTEMS IN THE UNITED STATES

M. Taylor[1], S. Letendre[2] and Rusty Haynes[3]

[1]Solar Electric Power Association, USA, [2]Green Mountain College, USA, [3]Interstate Renewable Energy Council, USA

5P-P3-53 IMPACT EVALUATION OF THE CHINESE BRIGHTNESS-PROGRAM IMPLEMENTED DURING 1996-2006

F. Haugwitz

Deutsche Gesellschaft für Technische Zusammenarbeit, China

5P-P3-54 SOCIO-ECONOMIC IMPACT MONITORING OF RURAL ELECTRIFICATION PROJECTS IN YUNNAN, GANSU, QINGHAI TIBET AUTONOMOUS REGION - A CHINA CASE STUDY

F. Haugwitz

Deutsche Gesellschaft für Technische Zusammenarbeit, China

5P-P3-55 DEVELOPMENT OF PHOTOVOLTAICS (2006) IN THE EUROPEAN UNION NEW MEMBER STATES

S. M. Pietruszko

Warsaw University of Technology, Poland

5P-P3-56 FEED-IN TARIFF: THE BEST MARKET SUPPORT MECHANISM

S. M. Pietruszko

Warsaw University of Technology, Poland

5P-P3-57 AWAKENING PV IN MEXICO

Y. Matsumoto[1], J. Agredano[2], A. Sánchez[3] and J. A. Urbano[1]

[1]CINVESTAV-IPN, Mexico, [2]IIE, Mexico, [3]CIE-UNAM, Mexico

5P-P3-58 ANALYSIS OF DISSEMINATION ACCELERATION POLICY FOR RESIDENTIAL PV SYSTEMS IN JAPAN

E. Endo

National Institute of Advanced Industrial Science and Technology (AIST), Japan

5P-P3-59 KOREA'S SOLAR ENERGY DEVELOPMENT PLAN AND INCENTIVE SYSTEM OF CDM & SRI

J. Lee

Myongji University, Korea

5P-P3-60 PV RESOURCES ANALYSIS IN WORLD SIX DESERTS WITH DETECTING SEASONAL DIFFERENCES AMONG SATELLITE IMAGES

Y. Hamano[1], M. Ito[2] and K. Kurokawa[1]

[1]Tokyo University of Agriculture and Technology, Japan, [2]Tokyo Institute of Technology, Japan

5P-P3-61 withdrawn

5P-P3-62 withdrawn

5P-P3-63 FEASIBILITY STUDY OF PV-BASED EMERGENCY MICROGRID

T. Kato[1], Y. Kondo[1], Y. Suzuoki[1] and T. Funabashi[2]

[1]Nagoya University, Japan, [2]Meidensha Corporation, Japan

5P-P3-64 PHOTOVOLTAICS EDUCATION OUTREACH TO THE ASIA-PACIFIC REGION

R. Corkish

The University of New South Wales, Australia

5P-P3-65 HOW PARTICIPATORY PRODUCT DESIGN AND MICRO-ENTREPRENEURSHIP FAVOR THE DISSEMINATION OF PHOTOVOLTAIC SYSTEMS IN CAMBODIA

A. Reinders[1], H. de Gooijer[2] and J. C. Diehl[3]

[1]University of Twente, The Netherlands, [2]KamWorks, Cambodia, [3]Delft University of Technology, The Netherlands

5P-P3-66 DEVELOPMENT OF LONG-TERM PV-MICRO-HYDRO HYBRID SYSTEM MANAGEMENT MODULE TO DISTRIBUTE OF KNOWLEDGE TO HILL TRIBE

K. Chomsuwan, P. Chaiprasit, R. Watchanakunanunt, B. Petcharanond , S. Tanchareon and S. Tia

King Mongkut's University of Technology Thonburi, Thailand

5P-P3-67 COST-EFFECTIVENESS OF SOLAR MODULES ON THE INTERNATIONAL PHOTOVOLTAIC MARKET

Y. Maruoka

Doitsu Giken Ltd., Japan

5P-P3-68 withdrawn

5P-P3-69 A COST ANALYSIS OF CO_2 REDUCTION BY UTILIZING LARGE-SCALE PV SYSTEMS IN JAPAN

M. Ito[1], Y. Tsuno[2] and K. Kurokawa[2]

[1]Tokyo Institute of Technology, Japan, [2]Tokyo University of Agriculture and Technology, Japan

5P-P3-70 ADVERSE HEALTH EFFECTS OF CIGS PARTICLES AFTER INTRATRACHEAL INSTILLATIONS INTO THE LUNG OF RATS

A. Tanaka, M. Hirata, Y. Kiyohara, M. Shiratani and K. Koga

Kyushu University, Japan

5P-P3-71 DESIGN AND ECONOMIC ANALYSIS OF A STAND-ALONE PV SYSTEM TO ELECTRIFY A REMOTE AREA HOUSEHOLD IN EGYPT

A. E. A. Nafeh

Electronics Research Institute, Egypt

5P-P3-72 A METHOD OF ESTIMASION OF CO2 EMISSION WITH REFERENCE TO BIPV STRUCTURE IN SOUTHEAST ASIA

T. Moyra[1], A. Majumder[2] and D. Mukherjee[1]

[1]Bengal Engineering &Science University, India, [2]West Bengal Renewable Energy Development Agency, India

5P-P3-73 RECENT STATUS AND FUTURE PROSPECTS OF PHOTOVOLTAICS IN TUNISIA

Late News

R. Andoulsi[1], A. El Kazen[2], A. Boutouta[3], A. Ounalli[2], B. Bessais[1] and K. Kurokawa[4]

[1]Research and Technology Centre of Energy, Tunisia, [2]Ministry of Industry, Tunisia, [3]Ministry of Agriculture and Water Exploitation, Tunisia, [4]Tokyo University of Agriculture and Technology, Japan

5P-P3-74 RAPID DEVELOPMENT OF PV INDUSTRY IN SHANGHAI AND CHINA

Late News

G. Wei

Shanghai University, China

5P-P3-75 ECONOMIC ANALYSIS OF A GRID CONNECTED SOLAR HYDROGEN PV SYSTEM

Late News

T. Marnoto, W. R. W. Daud, K. Sopian, M. N. Ab Rahman, R. Zulkifli, M. AlGhoul and N. Amin

Universiti Kebangsaan Malaysia, Malaysia

5P-P3-76 FINANCING A VERY LARGE SCALE PHOTOVOLTAIC SYSTEM IN GOBI DESERT

Late News

K. Megherbi[1], M. Ito[2], F. D. Ferretti[1] and K. Kurokawa[3]

[1]Dexia Credit Local, France, [2]Tokyo Institute of Technology, Japan, [3]Tokyo University of Agriculture and Technology, Japan

Poster Session 4

December 5th, Wednesday 16:00-17:30 Room: Poster I (5th Floor)

Area 2: III-V Materials and Devices for Concentrator and Space PV Systems / Area 6: PV Modules and System Components

Area 2

5P-P4-01 ACCEPTOR LEVELS AND CONCENTRATIONS IN GAASN THIN FILMS GROWN BY CHEMICAL BEAM EPITAXY

H. Suzuki, K. Nishimura, K. Saito, T. Hashiguchi, Y. Ohshita, N. Kojima and M. Yamaguchi

Toyota Technological Institute, Japan

5P-P4-02 MODELING OF MULTILAYERED QUANTUM WELL PHOTOVOLTAIC CELLS

V. Iancu and L. Fara

POLITEHNICA University of Bucharest, Romania

5P-P4-03 THE EFFECT OF RESIDUAL IMPURITIES ON ACCEPTOR CONCENTRATION IN GAASN FILMS GROWN BY CHEMICAL BEAM EPITAXY

K. Nishimura, H. Suzuki, K. Saito, Y. Ohshita, N. Kojima and M. Yamaguchi

Toyota Technological Institute, Japan

5P-P4-04 INPURITIES REDUCTION IN GAASN THIN FILMS BY FLOW RATE MODULATED CHEMICAL BEAM EPITAXY

K. Saito, K. Nishimura, H. Suzuki, Y. Ohshita, N. Kojima and M. Yamaguchi

Toyota Technological Institute, Japan

5P-P4-05 MOVPE GROWTH OF In-RICH InAlN FOR InAlN TANDEM SOLAR CELL

Y. Houchin, A. Hashimoto and A. Yamamoto

University of Fukui, Japan

5P-P4-06 MOVPE GROWTH AND Mg-doping of InxGa1-xN (x～0.4) FOR TANDEM SOLAR CELL

M. Horie, K. Sugita, A. Hashimoto and A. Yamamoto

University of Fukui, Japan

5P-P4-07 INCREASED PHOTOABSORPTION IN STRAIN-COMPENSATED QUANTUM DOT SOLAR CELLS

R. Oshima, A. Takata and Y. Okada

University of Tsukuba, Japan

5P-P4-08 OPTIMIZATION OF STACKING HIGH-DENSITY QUANTUM DOT MOLECULES FOR PHOTOVOLTAIC EFFECT

K. Laouthaiwattana, O. Tangmattajittakul, S. Suraprapapich, S. Thainoi, P. Changmuang, S. Kanjanachuchai, S. Ratanathammaphan and S. Panyakeow

Chulalongkorn University, Thailand

5P-P4-09 INFLUENCE OF LOCALIZED STATES IN OPTICAL PROPERTIES OF GAASN FILMS

B. Balamurugan, K. Nishimura, H. Suzuki, Y. Ohshita, and M. Yamaguchi

Toyota Technological Institute, Japan

5P-P4-10 RF-MBE GROWTH OF In-RICH InGaN FOR TANDEM SOLAR CELL

A. Hashimoto, K. Iwao and A. Yamamoto

University of Fukui, Japan

5P-P4-11 NOVEL PV DEVICE DIRECTLY EIMITTING LASER BEAM USING III-V MATERIALS FOR SPACE SOLAR POWER SYSTEM

K. Fujita[1], M. Kobayashi[2], H. Ohta[3], H. Furukawa[4] and M. Niino[5]

[1]The Graduate school for the Creation of New Photonics Industries, Japan, [2]Waseda University, Japan, [3]Hamamatsu Photonics K.K., Japan, [4]Institute for Laser Engineering, Japan, [5]Japan Aerospace Exploration Agency, Japan

5P-P4-12 AN APPROACH FOR DESIGNING AND OPTIMIZING ADVANCED MULTI-JUNCTION PHOTOVOLTAIC DEVICES FOR SPACE APPLICATIONS

S. Michael

Naval Postgraduate School, USA

5P-P4-13 FUNDAMENTAL PROPERTIES OF EPITAXIAL ALINN SEMICONDUCTORS

Q. Guo, T. Tanaka, M. Nishio and H. Ogawa

Saga University, Japan

5P-P4-14 FIELD TEST OF A GRID-CONNECTED 500X CONCENTRATOR PV SYSTEM WITH DOME FRESNEL LENS

Y. Kemmoku[1], K. Araki[2], Y. Miyazaki[3] and M. Hiramatsu[3]

[1]Toyohashi Sozo University, Japan, [2]Daido Steel Co. Ltd., Japan, [3]Daido Metal Co. Ltd., Japan

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5P-P4-15 OVERCOMING SOLAR ARRAY ANOMALIES WITH THE STRETCHED LENS ARRAY (SLA)

H. W. Brandhorst[1], J. A. Rodiek[1] and M. J. O'Neill[2]

[1]Space Research Institute, USA, [2]ENTECH Inc., USA

5P-P4-16 ACHIEVEMENT OF THE REGIONAL CONSORTIUM PROJECT IN JAPAN ON CPV SYSTEM DEVELOPMENT

K. Araki[1], M. Hiramatsu[2], Y. Miyazaki[2], T. Ito[3], S. Yamamoto[3], S. Kobayashi[4], K. Yamauchi[4], M. Tanemura[5], M. Lei[6], A. Akisawa[7], Y. Kemmoku[8], N. Kojima[9], S. Kato[10], A. Nishimura[10], S. Tanemura[6] and M. Yamaguchi[9]

[1]Daido Steel, Japan, [2]Daido Metal, Japan, [3]Ishizuka Glass, Japan, [4]Roofing Technology Laboratory, Japan, [5]Nagoya Institute of technology, Japan [6]Japan Fine Ceramics Center, Japan, [7]Tokyo University of Agriculture and Technology, Japan, [8]Toyohashi SOZO College, Japan, [9]Toyota Technological Institute, Japan, [10]Mie University, Japan

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5P-P4-17 WHAT IS THE MAXIMUM CONCENTRATION RATIO TO PRACTICAL TERRESTRIAL PV SYSTEMS

K. Araki

Daido Steel, Japan

5P-P4-18 DESIGN OPTIMIZATION OF THE PARALLEL-LINE TRACKING FOR ROOFTOP CPV APPLICATIONS

K. Araki

Daido Steel, Japan

5P-P4-19 ANALYSIS OF THE SHADOW FROM BUILDING FAÇADES ONTO SPECTRUM SENSITIVE III-V CONCENTRATOR PV SYSTEMS

K. Araki

Daido Steel, Japan

5P-P4-20 PMMA NON-IMAGE FRESNEL LENS ARRAY FABRICATED USING AN INJECTION-MOLDED TECHNIQUE

H. Hong, K. Kuo, H. Shin and C. Kuo

Institute of Nuclear Energy Research, Taiwan

5P-P4-21 DEVELOPMENT OF TRACKING SYSTEM FOR 500X CONCENTRATOR PV MODULE WITH DOME FRESNEL LENS

M. Hiramatsu[1], Y. Miyazaki[1], Y. Kato[1], T. Marumo[1] and Y. Kemmoku[2]

[1]Daido Metal Co. Ltd., Japan, [2]Toyohashi Sozo University, Japan

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5P-P4-22 A STUDY ON CONTINUOUS FABRICATION OF FRESNEL LENS FOR CONCENTRATING SOLAR POWER GENERATION

C. Yike

Huaqiao University, China

5P-P4-23 ESD GROUND TESTS USING LARGE-SCALE SOLAR PANELS IN LEO PLASMA ENVIRONMENT

H. Mashidori[1], S. Kawakita[1], K. Nitta[1] and K. Toyoda[2]

[1]Japan Aerospace Exploration Agency (JAXA), Japan, [2]Kyushu Institute of Technology, Japan

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5P-P4-24 RECONSIDERATION OF ELECTRON IRRADIATION TEST METHODS FOR THE EVALUATION OF SPACE SOLAR CELLS

T. Ohshima[1], S. Sato[1], H. Miyamoto[1,2], M. Imaizumi[3], H. Hanaya[1] and K. Kawano[2]

[1]Japan Atomic Energy Agency (JAEA), Japan, [2]The Univ. of Electro-Communications, Japan, [3]Japan Aerospace Exploration Agency (JAXA), Japan

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5P-P4-25 ANALYSIS FOR RADIATION-RESISTANCE OF INGAP SUB-CELLS

M. Yamaguchi[1], N. J. Ekins-Daukes[1], H. S. Lee[1], M. Imaizumi[2], T. Takamoto[3] and T. Ohshima[4]

[1]Toyota Technological Institute, Japan, [2]Japan Aerospace Exploration Agency, Japan, [3]Sharp Corporation, Japan, [4]Japan Atomic Energy Research Institute, Japan

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5P-P4-26 RESULTS OF CELL DURABILITY TESTS FOR JAXA'S HIHT PROJECTS, VENUS AND MERCURY EXPLORATION MISSIONS

M. Imaizumi, H. Toyota, H. Ogawa and M. Tajima

Japan Aerospace Exploration Agency (JAXA), Japan

5P-P4-27 EFFECTS OF IRRADIATION TEMPERATURE ON THE DEGRADATION OF ELECTRICAL CHARACTERISTICS OF InGaP SOLAR CELLS

H. Miyamoto[1,2], S. Sato[2], T. Ohshima[2], C. Morioka[3], M. Imaizumi[3] and K. Kawano[1]

[1]UEC, Japan, [2]JAEA, Japan, [3]JAXA, Japan

5P-P4-28 EFFECT OF IRRADIATION BEAM CONDITIONS ON RADIATION DEGRADATION OF SOLAR CELLS

M. Saito[1], M. Imaizumi[2], T. Ohshima[3] and Y. Ito[4]

[1]Advanced Engineering Services (AES), Japan, [2]Japan Aerospace Exploration Agency (JAXA), Japan, [3]Japan Atomic Energy Agency (JAEA), Japan, [4]Wakasawan Energy Research Center (WERC), Japan

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5P-P4-29 IDENTIFICATION OF SUITABLE SITE FOR SOLAR POWER SATELLITE IN INDIA AND COMPARISON OF LEO SSPS AND GEO SSPS

K. Chaudhary

Banaras Hindu University, India

5P-P4-30 DIAGNOSIS OF SPACE SOLAR CELLS BY ELECTROLUMINESCENCE AND PHOTOLUMINESCENCE IMAGING

Late News

H. Toyota[1], M. Imaizumi[2], Y. Nozaki[3] and M. Tajima[1]

[1]ISAS/JAXA, Japan, [2]IAT/JAXA, Japan, [3]NT Space, Japan

5P-P4-31 COMPARING THE EFFICIENCY OF TRACKING SOLAR CELL PANELS IN A TROPICAL LOCATION

P. Jumrusprasert, G. Smith and Leslie Kirkup

UTS, Australia

5P-P4-32 IN-SITU SERIES CONNECTION OF FLEXIBLE SOLAR CELLS

R. Merz, M. B. Schubert, G. Bilger and J. H. Werner

Universität Stuttgart, Germany

5P-P4-33 HIGH-EFFICIENCY, 0.8 M^2 THIN-FILM SI MODULES FABRICATED BY A BATCH PROCESS

P. Krudtad, P. Chinnavornrungsee, N. Udomdachanut, W. Tachakittiroje, C. Piromjit, N. Pingate and P. Sichanugrist

National Science and Technology Development Agency, Thailand

5P-P4-34 AMORPHOUS THIN FILM ASSMBLED SPHERICAL SOLAR CELL MODULE

K. Kawano[1], M. Kaminaga[1], K. Sakamoto[1] and K. Sasano[2]

[1]The University of Electro-Communications, Japan, [2]Asahi National Broadcasting Co., Japan

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5P-P4-35 DYNAMIC CHARACTERIZATIOIN OF POWER CONDITIONER WITH *I-V* CURVE FILL FACTER OF SOLAR CELL

Y. Hirata and T. Tani

Tokyo University of Science, Suwa, Japan

5P-P4-36 EXPERIMENTAL STUDIES ON DETECTING A DISCONNECTION POSITION OF BETWEEN PV MODULES BY THE ELECTRIC CAPACITANCE MEASUREMENT

J. Yamaguchi[1], T. Takashima[2] and M. Ishida[1]

[1]University of Tsukuba, Japan, [2]AIST, Japan

5P-P4-37 ANALYSIS OF TEMPERATURE HISTORY OF AMORPHOUS SILICON PHOTOVOLTAIC MODULES IN OUTDOOR

S. Fukushige, K. Ichida, T. Minemoto and H. Takakura

Ritsumeikan University, Japan

5P-P4-38 IMPACT OF ENVIRONMENT FACTORS ON SOLAR CELL PARAMETERS OF A-SI//μC-SI PHOTOVOLTAIC MODULES

K. Ichida[1], S. Fukushige[1], A. Nakajima[2], T. Minemoto[1] and H. Takakura[1]

[1]Ritsumeikan University, Japan, [2]Kaneka Corporation, Japan

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5P-P4-39 PV MODULE LOADING SYSTEM FOR OUTDOOR MODULE TESTING BASED ON PROGRAMMABLE LOAD AND CALIBRATED IRRADIATION SENSOR

A. Jagomägi

Tallinn University of Technology, Estonia

5P-P4-40 EXPERIMENTAL RESULTS ON MODULE CHARACTERISATION FOR HOT-SPOT PROTECTION

M. C. Alonso-García[1], F. Chenlo[1] and P. Sánchez-Friera[2]

[1]CIEMAT, Spain, [2]ISOFOTON, Spain

5P-P4-41 THE EFFECTS OF TEMPERATURE AND SOLDERS ON THE WETTABILITY BETWEEN RIBBON AND SOLAR CELL

H. Hsieh, F. Lin, F. Yeh and M. Lin

Industrial Technology Research Institute, Taiwan

5P-P4-42 A STUDY ON RELIABILITY ALLOCATION IN HCPV SYSTEM DESIGN

G. Lee[1], J. Chen[1], H. Lin[1], T. Yu[1] and C. Ma[2]

[1]Vanung University, Taiwan, [2]Nuclear Instrumentation Division, Taiwan

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5P-P4-43 MULTI-LASER LBIC SYSTEM FOR THIN FILM PV MODULE CHARACTERISATION

P. Vorasayan, T.R. Betts, R. Gottschalg and A.N. Tiwari

Loughborough University, UK

5P-P4-44 PRESUMPTIVE TECHNIQUE OF POWER GENERATION OF AMORPHOUS SILICON CELL INCLUDING VARIOUS FACTORS

E. Hirose, K. Fujiwara, Y. Ishihara and T. Todaka

Doshisha University, Japan

5P-P4-45 VOLTAGE AND FREQUENCY DEPENDENT MODEL FOR PV MODULE DYNAMIC IMPEDANCE

T. Chayavanich, C. Limsakul, N. Chayavanich, D. Chenvidhya, C. Jivacate and K.Kirtikara

King Mongkut's University of Technology Thonburi (KMUTT), Thailand

5P-P4-46 EVALUATION OF CURVE TRANSLATION PROCEDURES FOR CURRENT VOLTAGE CHARACTERISTICS OF PHOTOVOLTAIC DEVICES

K. Harvey, T. R. Betts and R. Gottschalg

Loughborough University, UK

5P-P4-47 CORRELATION BETWEEN ELECTRICAL PARAMETERS OF SOLAR CELLS AND TEMPERATURE CHARACTERISTICS OBTAINED FROM INFRARED THERMOGRAPHY

P. Parinya, B. Wiengmoon, D. Chenvidhya, C. Jivacate, K. Kirtikara and C. Limsakul

King Mongkut's University of Technology Thonburi, Thailand.

5P-P4-48 SPECTRAL RESPONSE MEASUREMENTS OF PV MODULES

Y. Hishikawa[1], Y. Tsuno[1,2] and K. Kurokawa[2]

[1]National Institute of Advanced Industrial Science and Technology (AIST), Japan, [2]Tokyo University of Agriculture and Technology, Japan

5P-P4-49 NI SPEEDY 33 – BASED SOLAR INTEGRATOR

K. Tunlasakun

KMUTT, Thailand

5P-P4-50 COST EFFICIENT AUTOMATED SUNLIGHT TRACKER FOR HIGHER POWER YIELD OF THE LARGE AREA SOLAR PV POWER STATIONS

N. Amin[1], L. Yi[2] and K. Sopian[3]

[1]National University of Malaysia, Malaysia, [2]Multimedia University, Malaysia, [3]National University of Malaysia, Malaysia

5P-P4-51 A STUDY OF PHOTOVOLTAIC/THERMAL SYSTEM IN THAI HOSPITAL

K. Chumpolrat, T. Nualboonrueng and P. Sichanugrist

National Science and Technology Development Agency, Thailand

5P-P4-52 RESEARCH ABOUT THE 500W C-SI PV & PEMFC HYBRID SYSTEM WITH LABVIEW

J. P. Yoon[1], I. S. Cha[2], J. S. Choi[2] and D. M. Kim[2]

[1]Fusion Information Tech. Co. Ltd., Korea, [2]Dongshin Univ., Korea

5P-P4-53 MANUFACTURING OF LARGE AREA FLEXIBLE SOLAR CELL MODULES ACCORDING TO THE NUON HELIANTHOS PROCESS

Late News

J. M. T. Lenssen, E. A. G. Hamers, G. C. Dubbeldam, J. Winkeler, E. Sportel, W. Scheerder, S. Broekhof, A. Borreman, S. Perin, R. Schlatmann, L. A. Stigter and G. J. Jongerden

Nuon Helianthos, The Netherlands

5P-P4-54 VERIFICATION OF CHANGING INTO STATE OF ASYNCHRONOUS INDUCTION GENERATOR OF INDUCTION MOTORS

Late News

H. Igarashi, K. Miyamoto and K. Kurokawa

[1]Japan Electrical Safety & Environment Technology Laboratories., Japan, [2]Tokyo University of Agriculture and Technology, Japan

Poster Session 5

December 6th, Thursday 11:00-12:30 Room: Poster I (5th Floor)

Area 1: Novel Materials and Devices / Area 4: Amorphous & Nano/Microcrystalline Silicon Based Solar Cells and Related Materials

Area 1

6P-P5-01 INVESTIGATION ON THE RELATIONSHIP BETWEEN MICROSTRUCTURE AND PERFORMANCE OF ZINC OXIDE/N-719 PHOTOANODES

M. Saito, K. Kakiuchi and S. Fujihara

Keio University, Japan

6P-P5-02 FABRICATION OF NANOPOROUS ZINC OXIDE ELECTRODES BY CHEMICAL BATH DEPOSITION FOR EFFICIENT DYE-SENSITIZED SOLAR CELLS

S. Ueno, M. Saito and S. Fujihara

Keio University, Japan

6P-P5-03 FABRICATION OF DYE SENSITIZED SOLAR CELL USING ANODIC ALUMINUM OXIDE

T. Lee, P. Alegaonkar and J. Yoo

Sungkyunkwan University, Korea

6P-P5-04 IMPEDANCE SPECTROSCOPY ON DYE-SENSITIZED SOLAR CELLS USING PEDOT:PSS COUNTER ELECTRODE AND POLYMER ELECTROLYTES

S. Park[1], Y. Cho[1], K. Jung[2], H. Lee[2], J. Lee[1] and M. Kim[1]

[1]Pusan National University, Korea, [2]Daehan Solvay Specialty Chemicals Co., Ltd., Korea

6P-P5-05 DYE-SENSITIZED SOLAR CELL USING LOCALIZED SURFACE PLASMON OF Ag NANOPARTICLES WITH DIFFERENT MODULATORS

R. Ito, K. Oryu, H. Shibuya and M. Ihara

Tokyo Institute of Technology, Japan

6P-P5-06 IN-SITU ULTRA-THIN POLYMER MENBRANE ELECTROLYTES FOR DYE-SENSITIZED SOLAR CELL

H. Yang, O. A. Ileperuma, M. Shimomura and Kenji Murakami

Shizuoka Unversity, Japan

6P-P5-07 EFFECT OF DIFFERENT INORGANIC NANOFILLER IN GEL ELECTROLYTE ON THE PERFORMANCE AND STABILITY OF SOLID-STATE DYE SENSITIZED SOLAR CELLS

M. S. Akhtar, J. Chun, S. R. Dhage, K. Kim and O. Yang

Chonbuk National University, Korea

6P-P5-08 DYE-SENSITIZED SOLAR CELL PREPARED FOR RECYCLING UMEBOSHI FLAVORING LIQUID WASTE

T. Yamaguchi[1], Y. Terada[1], K. Takagi[1], N. Kishimoto[1], S. Niiyama[2] and T. Imanishi[2]

[1]Wakayama College of Technology, Japan, [2]Wakayama Industrial Technology Center, Japan

6P-P5-09 PHOTOVOLTAIC PROPERTY OF PCBM NANOPARTICLES LINKED WITH Ru DYE

I. Park, K. Kim and D. Kim

Korea University, Korea

6P-P5-10 NANOCRYSTALLINE FILM DYE-SENSITIZED SOLAR CELLS PREPARED USING DIFFERENT TiO_2 MATERIALS

Q. Fan[1,2], S. Zhang[1], P. Holliman[2] and D. A. Worsley[3]

[1]The University of Sheffield, UK, [2]University of Wales, UK, [3]Swansea University, UK

6P-P5-11 QUARTZ REFLECTIVE COATING ON IR-EMITTERS FOR PV MANUFACTURING PROCESS

V. Reith

Heraeus-Noblelight, Germany

6P-P5-12 DYE-SENSITIZED SOLAR CELLS BASED ON LOW VISCOUS PHOSPHONIUM IONIC LIQUID ELECTROLYTES

H. Hayakawa[1], K. Tsunashima[2], M. Sugiya[2] and Y. Kunugi[1]

[1]Tokai University, Japan, [2]Nippon Chemical Industrial Co., Ltd., Japan

6P-P5-13 A STUDY ON THE DYE-ABSORPTION CHRACTERISTICS OF DYE-SENSITIZED SOLAR CELL BY APPLYING ELECTRIC FIELD

H. Seo, M. Kim, J. Hong, K. Prabakar and H. Kim

Pusan National University, Korea

6P-P5-14 HYDROTHERMAL SYNTHESIS OF ANATASE TIO_2 NANOTUBES AND THE APPLICATION IN DYE-SENSITIZED SOLAR CELLS

N. Cai, Y. Zhao, Y. Zhang and J. Zhang

Nankai University, China

6P-P5-15 COATING AL_2O_3 BLOCKING LAYER ON NANOPOROUS TiO_2 FILM BY ATOMIC LAYER DEPOSITION

C. Lee[1], M. Lee[1], F. Tsai[2] and C. Lin[2]

[1]Industrial Technology Research Institute, Taiwan, [2]National Taiwan University, Taiwan

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6P-P5-16 IMPACTS OF SURFACE TREATMENTS FOR TiO_2 FILMS ON PERFORMANCE OF DYE-SENSITIZED SOLAR CELLS

C. Huang, H. Cheng, Y. S. Lo, Y. Jan and Y. C. Huang

National Dong Hwa University, Taiwan

6P-P5-17 HIGHLY DURABLE INVERTED TYPE ORGANIC SOLAR CELL USING AMORPHOUS TITANIUM OXIDE AS ELECTRON COLLECTION ELECTRODE INSERTING BETWEEN ITO AND ORGANIC LAYER

T. Kuwabara, Y. Sigeyama, T. Yamaguchi and K. Takahashi

Kanazawa University, Japan

6P-P5-18 DYE SENSITIZED EFFECT ON TIO_2/POLY(3-HEXYLTHIOPHENE) HETERO JUNCTION SOLAR CELL

T. Iizawa, D. Suzuki and H. Nagayoshi

Tokyo National College of Technology, Japan

6P-P5-19 NANO-SIZED SINGLE CRYSTALS OF FULLERENE : NEW MATERIAL FOR BULK HETEROJUNCTION DONOR-ACCEPTOR TYPE 3D SOLAR CELLS

S. P. Somani, P. R. Somani and M. Umeno

Chubu University, Japan

6P-P5-20 MULTIWALL CARBON NANOTUBE (MWCNTs) COATED WITH COPPER PHTHALOCYANINE (CuPc) AND n-Si HETEROJUNCTION PHOTOVOLTAIC DEVICE

G. Kalita[1], S. Adhikari[1], H. R. Aryal[1], M. Sharon[2] and M. Umeno[1]

[1]Chubu University, Japan, [2]Birla College, India

6P-P5-21 MULTIWALLED CARBON NANOTUBES DECORATED WITH FULLERENE : NOVEL NEW MATERIAL FOR ORGANIC SOLAR CELLS

P. R. Somani, S. P. Somani and M. Umeno

Chubu University, Japan

6P-P5-22 PHOTOVOLTAIC RESPONSE OF NITROGENATED AMORPHOUS CARBON FILMS DEPSOITED BY MICROWAVE SURFACE WAVE PLASMA CVD

S. Adhikari, D. C. Ghimire, H. R. Aryal, G. Kalita, H. Uchida, M. Noda and M. Umeno

Chubu University, Japan

6P-P5-23 CONDUCTIVITY CONTROL OF C_{60} THIN FILMS BY Mg DOPING

N. Kojima, T. Terayama, H. Suzuki, M. Natori and M. Yamaguchi

Toyota Technological Institute, Japan

6P-P5-24 CRYSTAL STRUCTURES OF COPPER PHTHALOCYANINE ON C60 (111) SURFACE GROWN BY MOLECULAR BEAM EPITAXY

H. Suzuki, Y. Yamashita, N. Kojima and M. Yamaguchi

Toyota Technological Institute, Japan

6P-P5-25 NEW DONOR AND ACCEPTOR MATERIALS FOR ORGANIC THIN-FILM PHOTOVOLTAIC CELLS

T. Toru, S. P. Singh, D. Sukeguchi, H. Yoshiyama, H. Inukai, H. Sakuragi, S. Nakamura, N. Shibata, Y. Hayashi and T. Soga

Nagoya Institute of Technology, Japan

6P-P5-26 SYNTHESIS AND PROPERTY OF SOLUTION PROCESSED ZNPC/PCBM BULK HETERO-JUNCTION ORGANIC SOLAR CELLS

Y. Hayashi, H. Inukai, H. Sakuragi, D. Sukeguchi, H. Yoshiyama, S. Nakamura, N. Shibata, T. Soga and T. Toru

Nagoya Institute of Technology, Japan

6P-P5-27 DOPING EFFECTS FOR ORGANIC PHOTOVOLTAIC CELLS BASED ON SMALL MOLECULAR WEIGHT SEMICONDUCTORS

T. Taima[1], J. Sakai[2], T. Yamanari[1] and K. Saito[1]

[1]National Institute of Advanced Industrial Science and Technology (AIST), Japan, [2]Matsushita Electric Works, Ltd., Japan

6P-P5-28 ANNEALING EFFECT IN THE SEXITHIOPHENE : C_{70} BULK-HETEROJUNCTION ORGANIC PHOTOVOLTAIC CELLS

J. Sakai[1], T. Taima[2], T. Yamanari[2] and K. Saito[2]

[1]Matsushita Electric Works, Ltd., Japan, [2]National Institute of Advanced Industrial Science and Technology (AIST), Japan

6P-P5-29 NANOSTRUCTURED POLYMER BLENDS/INORGANIC TITANIA HYBRID PHOTOVOLTAIC DEVICES

M. Wu, H. Lo, H. Liao, Y. Chen, C. Chen and W. Su

National Taiwan University, Taiwan

6P-P5-30 ORGANIC DYE WAVELENGTH CONVERSION SOLAR CELLS

K. Kawano, B. C. Hong, S. Kohketsu, Y. Nakamura and K. Sakamoto

The University of Electro-Communications, Japan

6P-P5-31 ENHANCEMENT OF COPPER PATHLOCYANINE/C_{60} ORGANIC BI-LAYER SOLAR CELL PERFORMANCE BY GRADED BANDGAP LIGHT ABSORPTION LAYERS

Y. Kim[1], T. N. T. Nguyen[1], M. L. Monroe[2], T. J. Anderson[2] and C. Park[1]

1Yeungnam University, Korea, 2University of Florida, USA

6P-P5-32 INFLUENCE OF DONOR LAYER THICKNESS ON THE PROPERTIES OF PENTACENE/FULLERENE C_{60} ORGANIC PHOTOVOLTAIC DEVICES

Y. Xu[1,2], C. Jiang[2], X. W. Sun[1,2] and T. K. S. Wong[1]

[1]Nanyang Technological University, Singapore, [2]Institute of Microelectronics, Singapore

6P-P5-33 CURRENT-VOLTAGE CHARACTERISTICS OF P3HT/CdS NANO-ROD STRUCTURE MADE BY NANO-IMPRINTING AND ELECTRODEPOSITION

H. Noh, K. Han, K. Kim, H. Lee and D. Kim

Korea University, Korea

6P-P5-34 SYNTHESIS OF CdSe/CdTe TYPE-II HETEROJUNCTION NANOCRYSTALS FOR PV APPLICATIONS

H. Lee, J. Park and D. Kim

Korea University, Korea

6P-P5-35 A GOLD NANOPARTICLE-SENSITIZED TITANIUM(IV) DIOXIDE SOLAR CELL USING ELECTROLYTE SOLUTIONS CONTAINING S_X^{2-} /S^{2-} AS A REDOX PAIR

T. Kiyonaga, H. Okamoto, H. Matsui, M. Yoshihara and H. Tada

Kinki University, Japan

6P-P5-36 N-TYPE β-$FeSi_2$/P-TYPE Si HETEROJUNCTION SOLAR CELL FABRICATED BY FACING-TARGET DC SPUTTERING

M. Shaban, K. Nakashima, K. Nomoto and T. Yoshitake

Kyushu University, Japan

6P-P5-37 EFFICIENT CHARGE SEPARATION AND TRANSPORT IN THE POLY(3-HEXYLTHIOPHENE)/TIO_2 NANORODS BULK HETEROJUNCTION SOLAR CELLS

T. Zeng, T. Huang, H. Lo, C. Chen, Y. Lin, C. Chang, Y. Lin and W. Su

National Taiwan University, Taiwan

6P-P5-38 FABRICATION OF TEXTURED SURFACE FOR PHOTOVOLTAIC CELLS

H. Nam, J. Chang, J. Han, Y. Kim, J. Yi and D. Jung

Sungkyunkwan University, Korea

6P-P5-39 HYBRID PHOTOVOLTAIC DEVICE BASED ON Na-DOPED ZnO NANOWIRES AND ZINC PHTHALOCYANINES (ZnPc)

Z. Q. Ma, X. Tang, C. Y. Zhou, F. Xu and F. Li

Shanghai University, China

6P-P5-40 FABRICATION OF NANO-PATTERNED INDIUM-TIN OXIDE ELECTRODES USING BLOCK COPOLYMER LITHOGRAPHY FOR SOLAR CELLS

S. Park, T. Kim, J. Bang and D. Kim

Korea University, Korea

6P-P5-41 FABRICATION OF CADMIUM SULFIDE NANOSTRUCTURES ON ITO/GLASS USING ANODIC ALUMINUM OXIDE TEMPLATE FOR SOLAR CELL APPLICATIONS

N. Kim[1], Y. Han[2] and D. Kim[1]

[1]Korea University, Korea, [2]P&I Corporation, Korea

6P-P5-42 A NOVEL FABRICATION TECHNIQUE OF A NEW TRANSPARENT CONDUCTING ANODE: ALUMINIUM-DOPED ZINC OXIDE (AZO)

Late News

W. M. Tsang, F. L. Wong, M. K. Fung, C. S. Lee and S. T. Lee

City University of Hong Kong, Hong Kong SAR, China

6P-P5-43 PLATINUM COATING ON POLYMER COUNTER ELECTRODE PREPARED BY MAGNETRON SPUTTER FOR PLASTIC DYE-SENSITIZED SOLAR CELLS

Late News

M. Goto, Y. Xu, A. Kasahara and M. Tosa

National Institute for Materials Science, Japan

6P-P5-44 HYBRID SOLAR CELLS OF LAYER-BY-LAYER THIN FILM WITH POLYMER/FULLERENE BULK HETEROJUNCTION

Late News

K. Masuda, M. Ogawa, H. Benten, H. Ohkita and S. Ito

Kyoto University, Japan

Area 4

6P-P5-45 SIMULATION OF A SOLAR CELL PRODUCTION PROCESS TO DETERMINE THE STRESS IN A NON-PLANAR THIN FILM SOLAR CELL

I. C. Brazil and M. A. Green

University of New South Wales, Australia

6P-P5-46 POLYSILICON FABRICATED TEST STRUCTURES TO DETERMINE THE STRESS IN A THIN-FILM SOLAR CELL

I. C. Brazil, I. Perez-Wurfl and M. A. Green

University of New South Wales, Australia

6P-P5-47 MECHANICAL AND MICRO-STRUCTURAL CHARACTERISATION OF A THIN FILM POLYSILICON SOLAR CELL

I. C. Brazil and M. A. Green

University of New South Wales, Australia

6P-P5-48 THIN FILM SILICON SOLAR CELLS PREPARED BY TEMPERATURE CONTROLLED HOT-WIRE CHEMICAL VAPOR DEPOSITION

M. M. Adachi[1] and K. S. Karim[2]

[1]Simon Fraser University, Canada, [2]University of Waterloo, Canada

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6P-P5-49 EFFECTS OF TOTAL GAS FLOW RATE ON CRYSTALLINITY OF SI THIN FILMS PREPARED BY HOT WIRE CHEMICAL VAPOR DEPOSITION

W. Zi, Y. Zhou, F. Liu, Z. Sun and M. Zhu

Chinese Academy of Sciences, China

6P-P5-50 RESEARCH ON NEW STRUCTURE OF P-LAYERS IN FLEXIBLE THIN FILM SOLAR CELLS

R. Lin[1,2], D. Zhang[2], H. Cai[2], C. Shi[2] and S. Zhang[1]

[1]Beihang University, China, [2]Nankai University, China

6P-P5-51 DECREASE THE AMORPHOUS INITIAL INCUBATION LAYER IN HIGH-RATE DEPOSITED MICROCRYSTALLINE SILICON SOLAR CELLS

Q. Guo[1,2], X. Geng[1], Y. Zhao[1], C. Wei and L. Guo[2]

[1]Nankai University, China, [2]Shanghai Topsolar Green energy Co. , Ltd. , China

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6P-P5-52 STRUCTURAL CONTROL OF HIGH-RATE DEPOSITED MICROCRYSTALLINE SILICON FOR HIGH EFFICIENCY SOLAR CELL

G. Hou, X. Han, Q. Guo, X. Zhang, N. Cai, C. Wei, Y. Zhao and X. Geng

Nankai University, China

6P-P5-53 THE PERFORMANCE IMPROVEMENT OF HIGH RATE GROWTH MICROCRYSTALLINE SILICON SOLAR CELL BY INSERTION OF BUFFER LAYER TO P/I INTERFACE

X. Han, X. Zhang, G. Hou, Y. Yuan, D. Zhang, C. Wei, J. Sun, J. Xue, Y. Zhao and X. Geng

Nankai University, China

6P-P5-54 HIGH RATE DEPOSITION OF MICRO-CRYSTALLINE SILICON BY RF-PECVD: THE FUNCTION OF PRESSURE AND POWER AND THE DEPOSITION PHASE DIAGRAM

Z. Sun, F. Liu, W. Zi, Y. Zhou and M. Zhu

Chinese Academy of Sciences, China

6P-P5-55 STUDY OF SILICON BASED THIN FILM SOLAR CELLS ON POLYIMIDE SUBSTRATE

K. Tao, Q. Xi, H. Cai, Y. Xue, Y. Jiang, C. Shi and D. Zhang

Nankai University, China

6P-P5-56 STUDY OF TEXTURED PLASTIC SUBSTRATES AND BACK CONTACTS FOR AMORPHOUS SOLAR CELLS

H. Cai[1,2], D. Zhang[2], K. Tao[2], Q. Xi[2], Y. Xue[2], C. Shi[1 and] Y. Sun[1]

[1]Nankai University, China, [2]Nankai University, China

6P-P5-57 SOLID PHASE CRYSTALLIZATION OF AMORPHOUS SILICON ON ZNO:AL FOR THIN FILM SOLAR CELLS

C. Becker[1], K. Y. Lee[1], P. Dogan[1], F. Fenske[1], M. Berginski[2], J. Hüpkes[2], S. Gall[1] and B. Rech[1]

[1]Hahn-Meitner-Institut GmbH, Germany, [2]Forschungszentrum Jülich GmbH, Germany

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6P-P5-58 STRUCTURAL STUDY OF THE DEVICE QUALITY SILICON GERMANIUM THIN FILMS DEPOSITED BY PULSED RF PLASMA CVD

P. Chaudhuri[1], A. Bandyopadhyay[1], A. Bhaduri[1] and D. Williamson[2]

[1]Indian Association for the Cultivation of Science, India, [2]Colorado School of Mines, USA

6P-P5-59 MICROSTRUCTURE AND RESIDUAL STRESS IN NANOCRYSTALLINE SILICON FILMS: MATERIALS FOR SOLAR CELLS

S. Ray, A. Chowdhury and S. Sengupta

Indian Association for the Cultivation of Science, India

6P-P5-60 THERMAL POST-ANNEALING EFFECT ON PHOTOVOLTAIC PROPERTIES OF *n*-TYPE β-$FeSi_2$/*p*-TYPE Si HETEROJUNCTION

K. Nomoto, M. Shaban, K. Nakashima and T. Yoshitake

Kyushu University, Japan

6P-P5-61 MICROCRYSTALLINE SILICON THIN FILMS WERE DEPOSITED BY THE REACTIVE RF MAGNETRON SPUTTERING SYSTEM

Y. Tomita and M. Isomura

Tokai University, Japan

6P-P5-62 EFFECTS OF ACETILINE GAS ON THE PROPERTIES OF AMORPHOUS CARBON FILMS GROWN BY MICROWAVE SURFACE WAVE PLASMA CVD

D. C. Ghimire, S. Adhikari, H. R. Aryal, H. Uchida and M. Umeno

Chubu University, Japan

6P-P5-63 EFFECTS OF HIGH PRESSURE H_2O VAPOR TREATMENT ON POLYCRYSTALLINE SILICON-GERMANIUM THIN FILMS

Y. Sano and M. Isomura

Tokai University, Japan

6P-P5-64 GAS PHASE DIAGNOSIS FOR REACTIVE SPUTTERING OF MICROCRYSTALLINE SILICON GERMANIUM

Y. Uesaka, H. Kawauchi and M. Isomura

Tokai University, Japan

6P-P5-65 CORRELATION BEWTWEEN PHOTOCARRIER DIFFUSION LENGTH AND LATERAL SIZE OF HIGH-GROWTH-RATE MICROCRYSTALLINE SILICON

M. Nishino, T. Kawabe, Y. Sobajima, T. Toyama and H. Okamoto

Osaka University, Japan

6P-P5-66 HIGH QUALITY P-TYPE A-SI:H THIN FILM FOR HETEROJUNCTION SOLAR CELL PREPARED BY REMOTE PECVD

P. Supajariyawichai, M. S. Jeon, M. Dhamrin, M. Suda and K. Kamisako

Tokyo University of Agriculture and Technology, Japan

6P-P5-67 PREPARATION OF TITANIUM DIOXIDE THIN FILMS BY MEANS OF ELCTRON BEAM EVAPORATION FOR PROTECTING MATERIAL AGAINST ATOMIC HYDROGEN

S. Ogawa, M. Tobita, T. Iida, T. Narita, H. Kuze, T. Masuda, R. Koie, N. Yoshida and S. Nonomura

Gifu University, Japan

6P-P5-68 FAST DEPOSITION OF MICROCRYSTALLINE SILICON FILMS FROM SIH_2CL_2 UTILIZING THE HIGH-DENSITY MICROWAVE PLASMA

J. K. Saha[1], N. Ohse[1], K. Hamada[1], T. Kobayashi[2] and H. Shirai[1]

[1]Saitama University, Japan, [2]The Institute of Physics and Chemical Research (RIKEN), Japan

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6P-P5-69 RAPID CRYSTALLIZATION OF AMORPHOUS SILICON UTILIZING THE RF PLASMA TORCH

H. Shirai[1], Y. Takemura[2], K. Haruta[1], M. Yeo, Y. Ding[1] and T. Kobayashi[3]

[1]Saitama University, Japan, [2]Japan Science and Technology Agency (JST), Japan, [3]The Institute of Physics and Chemical Research (RIKEN), Japan

6P-P5-70 PREPARATION OF HYDROGENATED MICROCRYSTALLINE SILICON THIN FILMS BY HOT WIRE CVD UNDER HELIUM-DILUTED CONDITION

M. Tomita, S. Hiza, A. Yamada and M. Konagai

Tokyo Institute of Technology, Japan

6P-P5-71 HYDROGENATED MICROCRYSTALLINE SILICON SOLAR CELLS PREPARED ON LOW-TEMPERATURE-DEPOSITED ZINC OXIDE FILM WITH VARIOUS TEXTURES

S. Hiza, T. Hayashi, A. Yamada and M. Konagai

Tokyo Institute of Technology, Japan

6P-P5-72 IN SITU MONITERING OF NANOPARTICLES AND SILYL RADICAL DURING HYDROGENATED MICROCRYSTALLINE SILICON GROWTH

T. Nagai, A. H. M. Smets, H. Fujiwara and M. Kondo

National Institute of Advanced Industrial Science and Technology (AIST), Japan

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6P-P5-73 SYNTHESIS OF NANOCRYSTALLINE-FESI_2/SI HETEROJUNCTIONS FOR POTOVOLTAIC APPLICATIONS BY FACING TARGET DC SPUTTERING

H. Kondo, M. Shaban, K. Nakashima and T. Yoshitake

Kyushu University, Japan

6P-P5-74 OPTICAL ABSORPTION SPECTRA OF HIGH-GROWTH-RATE MICROCRYSTALLINE SILICON THIN-FILMS

T. Fukumori, M. Kurihara, Y. Sobajima, T. Toyama and H. Okamoto

Osaka University, Japan

6P-P5-75 FEASIBILITY STUDY ON HIGH EFFICIENCY POLY-SI THIN FILM SOLAR CELLS FORMED BY FLASH LAMP ANNEALING OF CAT-CVD AMORPHOUS SILICON

T. Fujiwara, Y. Endo, S. Nishizaki, K. Ohdaira, K. Nishioka and H. Matsumura

JAIST (Japan Advanced Institute of Science and Technology), Japan

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6P-P5-76 FREE CARRIER ABSORPTION IN GA-DOPED MICROCRYSTALLINE ZINC OXIDE FILMS

K. Matsuyama, Y. Wakazono, S. Maehara, T. Itoh and K. Shimakawa

Gifu University, Japan

6P-P5-77 IMPROVEMENT OF LIGHT-TRAPPING EFFECT ON MICROCRYSTALLINE SILICON THIN FILM SOLAR CELLS FABRICATED ON HIGH HAZE TRANSPARENT CONDUCTIVE OXIDE FILMS

M. Kambe, K. Masumo, N. Taneda, T. Oyama and K. Sato

Asahi Glass Co., Ltd., Japan

6P-P5-78 SILICON-HETEROJUNCTION CELLS WITH WIDE-BANDGAP MICROCRYSTALLINE FRONT EMITTERS

J. J. Gandía, R. Barrio, I. Torres, J. Cárabe and N. González

CIEMAT, Spain

6P-P5-79 LIGHT INDUCED DEGRADATION IN NANOCRYSTALLINE Si FILMS AND RELATED SOLAR CELLS: ROLE OF CRYSTALLINE FRACTION

Late News

S. Mukhopadhyay, R. Goswami and S. Ray

Indian Association for the Cultivation of Science, India

6P-P5-80 NOVEL ACRYLIC POLYMER SUBSTRATE WITH FINE TEXTURE AND APPLICATION TO SUPERSTRATE-TYPE AMORPHOUS SILICON SOLAR CELLS

Late News

K. Katsuma[1], S. Hayakawa[1], T. Matsui[2], A. Masuda[2] and M. Kondo[2]

[1]The Nippon Synthetic Chemical Industry Co., Ltd., Japan, [2]National Institute of Advanced Industrial Science and Technology, Japan

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6P-P5-81 NANO-SCALE CHARACTERIZATION OF MICROCRYSTALLINE SILICON SOLAR CELLS BY SCANNING NEARFIELD OPTICAL MICROSCOPY

Late News

T. Gotoh[1], Y. Yamamoto[2], Z. Shen[2], S. Ogawa[2], N. Yoshida[2], T. Itoh[2] and S. Nonomura[2]

[1]Gunma University, Japan, [2]Gifu University, Japan

Poster Session 6

December 6th, Thursday 16:00-17:30 Room: Poster II (5th Floor)

Area 1: Novel Materials and Devices / Area 4: Amorphous & Nano/Microcrystalline Silicon Based Solar Cells and Related Materials

Area 1

6P-P6-01 MONOLITHICALLY SERIES-INTERCONNECTED TRANSPARENT MODULES OF DYE-SENSITIZED SOLAR CELLS

Y. Takeda[1], N. Kato[1], K. Higuchi[1], A. Takeichi[1], T. Motohiro[1], S. Fukumoto[2], T. Sano[2] and T. Toyoda[2]

[1]Toyota Central Research and Development Laboratories, Japan, [2]AISIN SEIKI Co., Ltd., Japan

6P-P6-02 LONG-TERM DURABILITY AND DEGRADATION MECHANISM OF DYE SENSITIZED SOLAR CELLS SENSITIZED WITH MEROCYANINE DYES

H. Tanaka[1], A. Takeichi[1], K. Higuchi[1] ,T. Motohiro[1], M. Takata[2], N. Hirota[2], J. Nakajima[3] and T. Toyoda[3]

[1]Toyota Central Research and Development Laboratories, Japan, [2]Mitsubishi Paper Mills Ltd., Japan, [3]AISIN SEIKI Co., Ltd., Japan

6P-P6-03 STUDY ON DYE SENSITIZED SOLAR CELL USING NOVEL INFRARED DYE

T. Ono, T. Yamaguchi and H. Arakawa

Tokyo University of Science, Japan

6P-P6-04 THERMAL STABILITY OF DYE-SESITIZED SOLAR CELLS WITH CURRENT COLLECTING GRID

H. Matsui, K. Okada and T. Kitamura

Fujikura Ltd., Japan

6P-P6-05 NOVEL RUTHENIUM SENSITIZERS WITH TETRADENTATE POLYPYRIDINE LIGANDS FOR NANOCRYSTALLINE DYE-SENSITIZED SOLAR CELLS

K. Kasuga[1], M. Yanagida[1], T. Nagatani[2], M. Kasuya[1], R. Katoh[1], N. Onozawa-Komatsuzaki[1], Y. Himeda[1], T. Gunji[2], Y. Abe[2], O. Kitao[1], K. Sayama[1] and H. Sugihara[1]

[1]National Institute of Advanced Industrial Science and Technology (AIST), Japan, [2]Tokyo University of Science, Japan

6P-P6-06 DEPENDENCE OF THE PHOTOVOLTAIC PROPERTIES OF CDSE QUANTUM DOT-SENSITIZED SOLAR CELLS ON THE THICKNESS OF TIO2 LECTRODES

T. Toyoda, T. Uehata, L. J. Diguna, Q. Shen

The University of Electro-Communications, Japan

6P-P6-07 RUTHENIUM(II) COMPLEXES WITH π EXPANDED LIGAND HAVING PHENYLENE-ETHYNYLENE MOIETY AS SENSITIZERS FOR DYE-SENSITIZED SOLAR CELL

T. Funaki, M. Yanagida, N. Onozawa-Komatsuzaki, Y. Kawanishi, K. Kasuga and H. Sugihara

National Institute of Advanced Industrial Science and Technology (AIST), Japan

6P-P6-08 DEVELOPMENT OF HIGHLY EFFICIENT PLASTIC DYE SENSITIZED SOLAR CELL

N. Tobe, D. Matsumoto, T. Nagai, T. Yamaguchi and H. Arakawa

Tokyo University of Science, Japan

6P-P6-09 NOVEL PHOTOVOLTAIC CELL WITH MESOSCOPIC ELECTRODES SENSITIZED BY LEAD-HALIDE COMPOUNDS (8)

A. Kojima[1], K. Teshima[3], Y. Shirai[4] and T. Miyasaka[1,2,3]

[1]The University of Tokyo, Japan, [2]Toin University of Yokohama, Japan, [3]Peccell Technologies, Inc., Japan, [4]Tokyo Polytechnic University, Japan

6P-P6-10 SERIES-CONNECTED TANDEM DYE-SENSITIZED SOLAR CELL FOR IMPROVING EFFICIENCY MORE THAN 10%

T. Yamaguchi, Y. Uchida, S. Agatsuma and H. Arakawa

Tokyo University of Science, Japan

6P-P6-11 MULTI-WALLED CARBON NANOTUBES AS A COUNTER ELECTRODE OF DYE-SENSITIZED SOLAR CELLS

S. K. Lee[1], S. H. Hwang[1], J. H. Moon[1], K. S. Noh[1], D. Y. Lee[2], D. H. Kim[1], K.Y. Sohn[1] and M. H. Jeon[1]

[1]Inje University, Korea, [2]Korea Electrotechnology Research Institute, Korea

6P-P6-12 PHOTORECHARGEABLE PROPERTIES OF PHOTOCAPACITOR CONSISTED OF RuO_2 / ACTIVECARBON COMPOSITE AS ELECTRIC STORAGE MATERIAL

K. Teshima[1], H. Shinohara[1], J. Suzuki[2] and T. Miyasaka[1,2]

[1]Peccell Technologies, Inc., Japan, [2]Toin University of Yokohama, Japan

6P-P6-13 NON-ZERO CHEMICAL POTENTIAL OF SOLAR RADIATION IN GIBB'S METHOD

V. Laptev

University of Stuttgart, Germany

6P-P6-14 BLOCKING LAYER INSERTION EFFECT ON DYE SENSITIZED SOLAR CELLS

H. Nagayoshi, T. Iizawa, R. Midoh and K. Sadakuni

Tokyo National College of Technology, Japan

6P-P6-15 TEMPERATURE DEPENDENCE OF OPEN-CIRCUIT VOLTAGE IN DYE-SENSITIZED SOLAR CELLS

A. Usami, S. Seki, Y. Mita, H. Kobayashi, H. Miyashiro and N. Terada

Central Research Institute of Electric Power Industry, Japan

6P-P6-16 QUASI SOLID-STATE SOLAR CELLS SENSITIZED WITH ORGANIC DYE

O. A. Ileperuma, H. Yang, R. G. Asoka Kumara, M. Shimomura, M. Okuya, A. Konno and K. Murakami

Shizuoka Unversity, Japan

6P-P6-17 EFFECT OF ELECTROLYTE IN ELECTROSPUN POLY(VINYLIDENE FLUORIDE-HEXAFLUORO PROPYLENE) NANOFIBERS ON DYE-SENSITIZED SOLAR CELLS

J. U. Kim, S. H. Park, S. Y. Lee, J. K. Lee and M. R. Kim

Pusan National University, Korea

6P-P6-18 FTO TRANSPARENT CONDUCTING LAYER FOR DYE-SENSITIZED SOLAR CELLS

M. Okuya, K. Ohashi and T. Yamamoto

Shizuoka University, Japan

6P-P6-19 INFLUENCE OF RAPID THERMAL ANNEALING ON CNT BASED ELECTRODES FOR IMPROVED PHOTOVOLTAIC PERFORMANCE OF DSSC

J. H. Moon[1], S. H. Hwang[1], S. K. Lee[1], D. Y. Lee[2], D. H. Kim[1], W. B. Choi[3], M. H. Jeon[1]

[1]Inje University, Korea, [2]Korea Electrotechnology Research Institute, Korea, [3]Florida International University, USA

6P-P6-20 THE ANALYSIS OF DYE-SENSITIZED SOLAR CELLS with metal substrates BY ELECTROCHEMICAL IMPEDANCE SPECTROSCOPY

Y. Jun and M. Kang

Electronics and Telecommunications Research Institute, Korea

6P-P6-21 ULTRAFAST CHARGE SEPARATION AND EXCITON FORMATION IN POLYTHIOPHENE–FULLERENE BLEND FILMS

J. Guo, H. Ohkita, H. Benten and S. Ito

Kyoto University, Japan

6P-P6-22 FABRICATION AND PROPERTIES OF P3HT-PCBM AND PVCZ-PCBM BASED BULK-HETEROJUNCTION SOLAR CELLS

N. Kuretake[1], Y. Horii[2], H. Kusano[2] and M. Kitagawa[1]

[1]Tottori University, Japan, [2]Research Institute of Technology of Tottori Prefecture, Japan

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6P-P6-23 POLYMER PHOTOVOLTAIC CELLS WITH MODIFIED ANODE BUFFER LAYER

Y. Chen, Y. Lin, B. Ko and C. Ting

Industrial Technology Research Institutes, Taiwan

6P-P6-24 SOLUTION-PROCESSED MULTILAYERED POLYMER SOLAR CELLS

H. Ohkita, M. Ogawa, H. Benten and S. Ito

Kyoto University, Japan

6P-P6-25 ENCAPSULATION OF POLYMER SOLAR CELLS ON FLEXIBLE SUBSTRATES

T. Chen, D. Wuu, C. Wu, C. Lin and R. Horng

National Chung Hsing University, Taiwan

6P-P6-26 SYNTHESIS OF NOVEL DONOR-ACCEPTOR DYAD TOWARDS APPLICATION FOR ORGANIC THIN FILM SOLAR CELLS

T. Nishizawa, K. Tajima and K. Hashimoto

The University of Tokyo, Japan

6P-P6-27 SYNTHESIS OF CROSS-LINKABLE POLYTHIOPHENES AND ITS APPLICATION TO ORGANIC PHOTOVOLTAIC CELLS

S. Miyanishi, K. Tajima and K. Hashimoto

The University of Tokyo, Japan

6P-P6-28 USE OF ZNO NANOSTRUCTURE TOWARDS HIGH EFFICIENCY INORGANIC/ORGANIC HYBRID THIN FILM SOLAR CELLS

K. Takanezawa, K. Tajima and K. Hashimoto

The University of Tokyo, Japan

6P-P6-29 BULK HETEROJUNCTION MEH-PPV:TiO_2 POROUS STRUCTURED SOLAR CELLS

K. Inpor[2], S. Reabanko[1], P. Boonchan[1], C. Junin[1], C. Euvananont[1], S. Sahasithiwat[1], P. Limthongkul[1], C. Sae-Kung[2], P. Sichanugrist[2] and C. Thanachayanont[1]

[1]National Metal and Materials Technology Center, Thailand, [2]National Science and Technology Development Agency, Thailand

6P-P6-30 PHOTOACTIVE HYBRIDS PREPARED BY ELECTROCHEMICAL POLYMERIZATION OF POLYBITHIOPHENE FROM NANOPOROUS TITANIA FILMS

P. Y. Lan, W. F. Su and L. Wang

National Taiwan University, Taiwan

6P-P6-31 HIGH PERFORMANCE POLYMER SOLAR CELL WITH TIO_X LAYER

O. Yoshikawa, T. Sagawa and S. Yoshikawa

Kyoto University, Japan

6P-P6-32 IMPACT IONIZATION AND AUGER RECOMBINATION AT HIGH CARRIER TEMPERATURES

Y. Takeda[1], T. Ito[1], R. Suzuki[1], T. Motohiro[1], S. Shrestha[2] and G. Conibeer[2]

[1]Toyota Central Research and Development Laboratories, Inc., Japan, [2]The University of New South Wales, Australia

6P-P6-33 PHOTOCURRENT CHARACTERISTICS OF CLOSE-PACKED HgSe NANOPARTICLE FILMS FABRICATED ON FLEXIBLE PLASTIC SUBSTRATES

J. Jang, K. Cho and S. Kim

Korea University, Korea

6P-P6-34 CARBON NANOTUBE FILMS GROWN BY PULSED LASER DEPOSITION TECHNIQUE FOR SOLAR CELL

R. A. Afre[1], M. Rusop[3], T. Soga[1], T. Jimbo[1] and M. Sharon[2]

[1]Nagoya Institute of Technology, Japan, [2]Birla College, India, [3]University Technology Mara, Malaysia

6P-P6-35 STRUCTURAL AND OPTICAL PROPERTIES OF PHOSPHORUS DOPED SILICON QUANTUM DOT SUPPERLATTICE FOR ALL SILICON TANDEM SOLAR CELL

X. Hao[1], E. Cho[1], G. Scardera[1], E. Bellet[2], D. Bellet[2], S. Park[3], G. Conibeer[1] and M. A. Green[1]

[1]University of New South Wales, Australia, [2]Laboratoire GPM2-ENSPG, France, [3]Samsung Advanced Institute of Technology, Korea

6P-P6-36 SYNTHESIS AND CHARACTERIZATION OF SILICON NANOWIRES FOR SOLAR CELL APPLICATION

M. S. Jeon, T. Suzuki, Y. Tomitsuka and K. Kamisako

Tokyo University of Agriculture and Technology, Japan

6P-P6-37 SPIRAL HETEROSTRUCTURE-BASED NEW SOLAR CELL TO BE FABRICATED IN CLEAN-UNIT SYSTEM PLATFORM

N. Kawaguchi, Md. D. Rahaman, K. Gomita, H. Kaiju and A. Ishibashi

Hokkaido University, Japan

6P-P6-38 MICROSTRUCTURE AND OPTICAL PROPERTIES OF CARBON FILM DEPOSITED BY PULSED DISCHARGE PLASMA CVD

M. Noda, T. Yoshida, P. R. Somani and M. Umeno

Chubu University, Japan

6P-P6-39 SUBSTRATE TEMPERATURE EFFECTS IN EXCIMER LASER DEPOSITED FULLERENE FILMS FOR PHOTOVOLTAIC APPLICATION

S. M. Mominuzzaman[1,2], T. Soga[1] and T. Jimbo[1]

[1]Nagoya Institute of Technology, Japan, [2]Bangladesh University of Engineering and Technology, Bangladesh

6P-P6-40 SILICON QUANTUM DOT SUPERLATTICES IN SIC MATRIX FOR ALL SILICON TANDEM CELLS

Y. Cho, D. Song, E. Cho, G. Conibeer and M. A. Green

University of New South Wales, Australia

6P-P6-41 SCANNING NEAR-FIELD AND CONFOCAL RAMAN MICROSCOPIC INVESTIGATION ON MULTI-WALLED CARBON NANOTUBES IN POLYMER PHOTOVOLTAIC DEVICE

S. Chen, M. Wu, Y. Lin, Y. Chen, C. Chen and W. Su

National Taiwan University, Taiwan

6P-P6-42 FABRICATION OF β-$FeSi_2$ NANOPARTICLES/Si COMPOSITE FILM BY USING SCANNING ANNEALING

S. Terasawa, T. Inoue, A. Genseki and M. Ihara

Tokyo institute of technology, Japan

6P-P6-43 USING N3 DYE MOLECULES TO IMPROVE THE COMPATIBILITY OF INORGANIC ZNO AND CONJUGATED POLYMER BULK-HETEROJUNCTION HYBRID PHOTOVOLTAIC DEVICE

Late News

C. Hsu and L. Wang

National Taiwan University, Taiwan

6P-P6-44 IMPROVEMENT OF POLYMER/FULLERENE SOLAR CELLS BY CONTROLLING GEOMETRY OF ITO SUBSTRATE SURFACE

Late News

H. Yano, D. Kouro, N. Sasaki and S. Muramatsu

Tokushima Bunri University, Japan

6P-P6-45 THE DYE SENSITIZED SOLAR CELL PERFORMANCE USING SMALLER TiO2 POWDERS IN A DOUBLE LAYERED PHOTOELECTRODE

Late News

M. Sangklinhom, J. Yamada and R. Imai

Shibaura Institute of Technology, Japan

6P-P6-46 EFFICIENCY IMPROVEMENT OF ORGANIC SOLAR CELLS BY ANNEALING TREATMENT FOR ACTIVE LAYER

Late News

Y. Tsai[1], W. Chu[1], C. Chen[1], F. Juang[1], M. Chang[2] and M. Liu[2]

[1]National Formosa University, Taiwan, [2]Industrial Technology Research Institute, Taiwan

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6P-P6-47 IN-SITU STUDIES OF DYE DEGRADATION MECHANISMS IN DYE-SENSITIZED SOLAR CELLS BY SPECTRAL ANALYSIS

Late News

T. C. K. Yang[1], S. Wang[1], S. P. Fu[2] and S. Y. Tsai[2]

[1]National Taipei University of Technology, Taiwan, [2]Industrial Technology Research Institute, Taiwan

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Area 4

6P-P6-48 MEDIUM RANGE ORDER OF NANO-CRSTALLINE SILICON FILMS DEPOSITED BY MULTI-HOLLOW DISCHARGE PLASMA CVD

M. Shiratani[1], W. M. Nakamura[1], H. Miyahara[1], K. Koga[1], S. Nunomura[2] and M. Kondo[2]

[1]Kyushu University, Japan, [2]Advanced Industrial Science and Technology, Japan

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6P-P6-49 EVALUATION OF VOLUME FRACTION OF CLUSTERS INTO A-SI:H FILMS

W. M. Nakamura, H. Miyahara, K. Koga and M. Shiratani

Kyushu University, Japan

6P-P6-50 THE FABRICATION OF THIN FILM SOLAR CELLS USING MICROCRYSTALLINE CUBIC SILICON CARBIDE AS A DOPING LAYER

S. Ogawa, Y. Ikeda, T. Itoh, N. Yoshida and S. Nonomura

Gifu University, Japan

6P-P6-51 THEORETICAL SIMULATION OF 4-TERMINAL TANDEM SOLAR CELL WITH IDEAL OPTICAL PARAMETERS

Y. Eo, J. Ko, M. Kwon, K. Ahn, H. Lee and D. Lee

LG Electronics Institute of Technology, Korea

6P-P6-52 CHARACTERISATION OF TRANSPARENT CONDUCTING ZnO:Al THIN FILMS FORMED ON PET BY DC MAGNETRON SPUTTERING

D. Ai[1], K. Kim[1], J. Lee[2], N. Lakshminarayan[1,3] and J. Yi[1]

[1]Sungkyunkwan University, Korea, [2]Kunsan National University, Korea, [3]Madras Christian College, India

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6P-P6-53 MANUFACTURING THE LOW COST AND HIGH EFFICIENT SOLAR CELL USING HYPERTHERMAL NEUTRAL BEAM

B. J. Lee[1], K. S. Oh[1], S. W. Choi[2], D. C. Kim[1], Y. W. Kim[1], Y. C. Park[2], S. J. Yoo[1] and M. P. Hong[3]

[1]Nuclear Fusion Research Center, Korea, [2]Han-Dong Global University, Korea, 3Korea University, Korea

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6P-P6-54 LATERAL SCATTERING EFFECT DURING I-V MEASUREMENT OF SILICON THIN-FILM SOLAR CELLS

J. Lee[1], J. Jang[1], J. Yi[2], J. Song[1] and K. Yoon[1]

[1]Korea Institute of Energy Research, Korea, [2]Sungkyunkwan University, Korea

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6P-P6-55 EFFECTS OF THE FILM THICKNESS ON THE OPTICAL, STRUCTURAL AND ELECTRICAL PROPERTIES OF Al DOPED ZnO THIN FILMS PREPARED USING RF-MAGNETRON SPUTTERING METHOD

C. Kim[1], C. Jeong[2], S. Boo[2], J. Moon[1] and J. Kim[1]

[1]Chonnam National University, Korea, [2]KITECH, Korea

6P-P6-56 STRUCTURAL STUDY OF A HIGH STABILIZED HYDROGENATED AMORPHOUS SILICON THIN FILM AS A FUNCTION OF H2 / SIH4 RATIO

H. S. Lee, B. S. Kim, J. H. Yun, H. N. Kim, S. K. Kwon, H. M. Lee and D. H. Lee

LG Electronics Institute of Technology, Korea

6P-P6-57 ZnO:Al/p INTERFACE PROPERTIES AND THEIR EFFECT ON SUPERSTRATE PIN a-Si:H SOLAR CELLS

J. Lee[1,2], J. Lee[1], B. Oh[2], J. Song[1] and K. Yoon[1]

[1]Korea Institute of Energy Research, Korea, [2]Chung-Nam National University, Korea

6P-P6-58 HIGH RATE DEPOSITION OF MICROCRYSTALLINE SILICON THIN-FILMS BY HOT WIRE CVD

S. Baek, S. Park, S. Na, J. Lee, J. Song and K. Yoon

Korea Institute of Energy Research, Korea

6P-P6-59 CONTROL OF SURFACE MORPHOLOGY AND LIGHT SCATTERING OF TEXTURED ZNO:AL FOR SILICON THIN-FILM SOLAR CELLS

Y. Kim[1,2], J. Lee[1], J. Wang[2], J. Song[1] and K. Yoon[1]

[1]Korea Institute of Energy Research, Korea, [2]Chungnam National University, Korea

6P-P6-60 EFFECT OF INTERFACIAL REACTION OF ITO AND ZNO ON AMORPHOUS SILICON IN SI HETEROJUNCTION SOLAR CELLS

M. Kang[1], Y. Ok[1], S. Tark[1], J. Lee[2], K. Yoon[2], J. Song[2] and D. Kim[1]

[1]Korea University, Korea, [2]Korea Institute of Energy Research, Korea

6P-P6-61 EFFECT OF TUNNEL RECOMBINATION JUNCTION ON ELECTRICAL AND OPTICAL PERFORMANCES OF a-Si:H/μc-Si:H THIN-FILM TANDEM SOLAR CELLS

J. Jang, J. Lee, J. Song and K. Yoon

Korea Institute of Energy Research, Korea

6P-P6-62 ELECTRICAL AND OPTICAL PROPERTIES OF HYDROGEN-TREATED ZnO:Al FILMS

S. Tark[1], M. Kang[1], S. Lee[2], W. Kim[2] and D. Kim[1]

[1]Korea University, Korea, [2]Korea Institute of Science and Technology, Korea

6P-P6-63 DEVELOPMENT AND PERFORMANCE EVALUATION OF LEAD-FREE SILVER PASTES OPTIMIZED VIA DESIGN OF COMPOSITION FOR FABRICATION OF SCREEN-PRINTED SI SOLAR CELLS HAVING HIGH FILL FACTORS

S. Jeon[1], S. Hwang[2] and S. Koo[1]

[1]Hanyang University, Korea, [2]Taiyo Ink MFG. Co., Ltd, Korea

6P-P6-64 DEPOSITION OF POLYCRYSTALLINE SILICON FILM AT LOW TEMPERATURE BY PULSED DISCHARGE SPUTTERING IN HYDROGEN

M. Noda, T. Suzuki and M. Umeno

Chubu University, Japan

6P-P6-65 THIN FILM SILICON n-i-p SOLAR CELLS DEPOSITED BY VHF PECVD AT 100°C SUBSTRATE TEMPERATURE

M. Brinza, J. K. Rath and R. E. I. Schropp

Utrecht University, The Netherlands

6P-P6-66 OPTIMIZATION OF MAGNETRON SPUTTERED ZnO:Al AS A BACK REFLECTOR IN a-Si:H SOLAR CELLS

A. M. K. Dagamseh, B. Vet and M. Zeman

Delft University of Technology, The Netherlands

6P-P6-67 FLEXICOAT300: A NEW PILOT ROLL-TO-ROLL PECVD SYSTEM FOR FABRICATION OF THIN FILM SILICON SOLAR CELLS ON FOIL

W. Soppe[1], H. Schlemm[2], C. Devilee[1], J. Löffler[1], M. Heijna[1], M. Dörenkämper[1] and B. B. Van Aken[1]

[1]ECN Solar Energy, The Netherlands, [2]Roth&Rau AG, Germany

6P-P6-68 RESPONSE TO OUTDOOR IRRADIATION CONDITIONS OF THIN FILM SILICON BASED TRIPLE BAND GAP, TRIPLE JUNCTION SOLAR CELLS

P. Krishnan, J. W. A. Schüttauf, C. H. M. van der Werf, B. Houshyani, W. G. J. H. M. van Sark and R. E. I. Schropp

Utrecht University, The Netherlands

6P-P6-69 DEVICE RELEVANT MATERIAL PROPERTIES OF POLY-SI FILMS OBTAINED FROM OPTICAL TRANSMISSION AND REFLECTION

B. Hoex[1], S. He[2], O. Kunz[2], D. Inns[2], W. M. M. Kessels[1], M. C. M. van de Sanden[1] and A. G. Aberle[2]

[1]Eindhoven University of Technology, The Netherlands, [2]The University of New South Wales, Australia

6P-P6-70 FRONT- AND BACK-SURFACE RECOMBINATION IN SILICON-HETEROJUNCTION CELLS

R. Barrio[1], J. J. Gandía[1], J. Cárabe[1], N. González[1], C. Voz[2] and D. Muñoz[2]

[1]CIEMAT, Spain, [2]Universitat Politècnica de Catalunya, Spain

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6P-P6-71 DEPOSITION OF MICROCRYSTALLINE SILICON THIN FILM WITH HIGH DEPOSITION RATE AND INVISIBLE INCUBATION LAYER

C. Huang, J. Liu, T. Wong, J. Wu, Y. Luo, H. Yang and C. Chen

Industrial Technology Research Institute, Taiwan

6P-P6-72 FABRICATION OF μC-SI/C-SI SOLAR CELLS BY HOT-WIRE CHEMICAL VAPOR DEPOSITION AND LASER ANNEALING

B. Wu[1], D. Wuu[1], S. Lien[1], H. Mao[1] and M. Tseng[2]

[1]National Chung Hsing University, Taiwan, [2]National Formosa University, Taiwan

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6P-P6-73 HIGH DEPOSITION RATE MICROCRYSTALLINE SILICON FILMS PREPARED BY CONVENTIONAL PECVD

C. Yang, P. Yang, Y. Jiang, C. Hsueh and S. Lee

National Taiwan University, Taiwan

6P-P6-74 THE EFFECT OF BACK CONTACT ZNO:AL DEPOSITION CONDITION ON AMORPHOUS SILICON THIN-FILM SOLAR CELLS

H. Yang, Y. Luo, J. Wu, J. Liu and C. Chen

Industrial Technology Research Institute, Taiwan

6P-P6-75 TUNGSTEN FILAMENT EFFECT ON ECECTRONIC PROPERTIES OF HOT-WIRE CVD FABRICATED SI HETROJUNCTION SOLAR CELL

M. Tseng[1], H. Yu[1], S. Lien[2], C. Lee[3] and D. Wuu[2]

[1]National Formosa University, Taiwan, [2]National Chung Hsing University, Taiwan, [3]National Kaohsiung Marine University, Taiwan

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6P-P6-76 GROWTH AND CHARACTERIZATION OF NANOCRYSTALLINE SILICON GERMANIUM FILMS FROM A MIXTURE OF SILANE AND MONOMETHYLGERMANE

Y. Yashiki, S. Miyajima, A. Yamada and M. Konagai

Tokyo Institute of Technology, Japan

6P-P6-77 INTEGRATION OF MICROCRYSTALLINE SILICON FILMS DEPOSITED AT VERY HIGH DEPOSITION RATES IN TO PIN SOLAR CELLS USING THE MHC-VHF TECHNIQUE

A. Smets, T. Matsui and M. Kondo

National Institute of Advanced Industrial Science and Technology, Japan

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6P-P6-78 COMPOSITION DEPENDENCE OF ESR SPIN DENSITIES IN HYDROGENATED MICROCRYSTALLINE SILICON-GERMANIUM ALLOY THIN FILMS

C. W. Chang[1,2,3], T. Matsui[1], H. Fujiwara[1] and M. Kondo[1,3]

[1]National Institute of Advanced Industrial Science and Technology (AIST), Japan, [2]Industrial Technology Research Institute (ITRI), Taiwan, [3]Tokyo Institute of Technology, Japan

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6P-P6-79 FABRICATION OF HIGH OPEN-CIRCUIT VOLTAGE a-SiO:H SOLAR CELLS

K. Sriprapha, S. Inthisang, A. Yamada and M. Konagai

Tokyo Institute of Technology, Japan

6P-P6-80 STRUCTURAL INVESTIGATION OF POLYCRYSTALLINE SILICON FILMS FORMED ON GLASS SUBSTRATES BY FLASH LAMP ANNEALING OF PRECURSOR AMORPHOUS SILICON

Late News

K. Ohdaira, T. Fujiwara, Y. Endo, S. Nishizaki, K. Nishioka and H. Matsumura

Japan Advanced Institute of Science and Technology, Japan

6P-P6-81 LOW TEMPERATURE FABRICATION OF HYDROGENATED MICROCRYSTALLINE SILICON THIN FILMS USING RF MAGNETRON SPUTTERING

Late News

H. Wang, C. Han, S. Chen and C. Lee

National Central University, Taiwan

6P-P6-82 ARRAY ANTENNA VHF-PCVD SYSTEM FOR MICROCRYSTALLINE SILICON SOLAR CELLS

Late News

N. Yamamoto, T. Takagi, Y. Iwasaki and A. Yoshinouch

IHI Corporation, Japan

6P-P6-83 CHAMBER CLEANING FOR CHEMICAL VAPOR DEPOSITION USING PULSE TIME MODULATED F2 GAS PLASMA

Late News

A. Sato[1], Y. Hoshino[2], T. Ozaki[1], M. Kondo[3] and S. Samukawa[1]

[1]Tohoku Univ., Japan, [2]SHOWA DENKO K.K., Japan, [3]AIST, Japan

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Feedstock, Slice, Impurites and Defects in Si

Area 3 December 3rd, Monday 9:00-10:15 (Room B)

Chs: Y. Yoshida Shizuoka Institute of Science and Technology, Japan

R. Einhaus Apollonsolar, France

3O-B1-01		BORON REMOVAL FROM MOLTEN SILICON WITH SILICATE SLAG	L. A. V. Teixeira and K. Morita	The University of Tokyo, Japan
3O-B1-02		STUDY ON SILICON-SLICING TECHNIQUE USING PLASMA-ETCHING PROCESSING	M. Yamaguchi[1,2], Y. Abe[1], T. Kimura[1], A. Masuda[2] and M. Kondo[2]	[1]Toyo Advanced Technologies Co., Ltd., Japan, [2]National Institute of Advanced Industrial Science and Technology (AIST), Japan
3O-B1-03		EFFECT OF CRUCIBLE PURITY ON MULTICRYSTALLINE SI INGOT QUALITY DURING UNIDIRECTIONAL SOLIDIFICATION	M. Dhamrin[1], T. Saitoh[1], K. Kamisako[1], K. Yamada[2], H. Suzuki[2], N. Araki[2] and I. Yamaga[2]	[1]Tokyo University of Agriculture and Technology, Japan, [2]Dai-ichi Kiden Corp., Japan
3O-B1-04		EFFECT OF CRUCIBLE ROTATION ON IMPURITIES DISTRIBUTIONS IN CAST GROWN POLYCRYSTALLINE SILICON INGOTS	K. Arafune, T. Higo, F. Kusuoka, Y. Ohshita and M. Yamaguchi	Toyota Technological Institute, Japan
3O-B1-05		OXYGEN INCOPORATION MECHANISM FROM A CRUCIBLE IN MULTICRYSTALLINE SILICON FOR SOLAR CELLS	H. Matsuo[1], R. Bairava Ganesh[1,2], S. Nakano[1], L. Liu[1], Y. Kangawa[1], K. Arafune[3], Y. Ohshita[3], M. Yamaguchi[3] and K. Kakimoto[1]	[1]Kyushu University, Japan, [2]Anna University, India, [3]Toyota Technological Institute, Japan

PV Industries and Market (1)

Area 8 December 3rd, Monday 9:00-10:15 (Room C)

Chs: K. Komoto Mizuho Information & Research Institute, Inc., Japan

R. Hass Vienna University of Technology, Austria

3O-C1-01		ENERGY FROM THE DESERT - A HUGE POTENTIAL FOR SOCIO-ECONOMIC DEVELOPMENT -	P. van der Vleuten	Free Energy International BV, The Netherlands
3O-C1-02		A PV MARKET: THE CASE OF GREECE	G. C. Dimitriou	German-Hellenic Chamber of Industry and Commerce, Greece
3O-C1-03	Invited	INTERNATIONAL TRENDS IN PHOTOVOLTAIC MARKETS	P. Hüsser[1], G. Watt[2], I. Kaizuka[3] and P. Cowley[4]	[1]Nova Energie, Switzerland, [2]Australian PVPS Consortium, Australia, [3]RTS Corporation, Japan, [4]IT Power, Australia
3O-C1-04	Invited	PV MARKET IN JAPAN AND ACTIVITIES OF JPEA	J. Honda	Japan Photovoltaic Energy Association (JPEA), Japan
3O-C1-05	Invited	TBD	M. Cameron	Phoenix Solar AG., Germany

Dye Sensitized Solar Cell

Area 1 December 3rd, Monday 10:15-11:45 (Room A)

Chs: S. Hayase Kyushu Institute of Technology, Japan

A. Hinsch Fraunhofer Institute for Solar Energy Systems, Germany

3O-A2-01	Invited	DYE SOLAR MODULES FOR FACADE APPLICATIONS: RECENT RESULTS FROM PROJECT COLORSOL	A. Hinsch[1], H. Brandt[1], S. Hemming[1], M. Nittel[1], U. Würfel[2], P. Putyra[2], C. Lang-Koetz[3], M. Stabe[3], S. Beuker[4] and K. Fichter[4]	[1]Fraunhofer Institute for Solar Energy Systems, Germany, [2]Freiburger Material Research Center FMF, Germany, [3]Fraunhofer Institute for Industrial Engineering, Germany, [4]Border Step Institute, Germany
3O-A2-02		FABRICATION OF EFFICIENT DSC SUB-MODULE AND ITS LONG-TERM STABILITY	T. Sutou, Y. Koishi, T. Yamaguchi and H. Arakawa	Tokyo University of Science, Japan
3O-A2-03		LONG-TERM STABILITY OF DYE-SENSITIZED SOLAR CELL MODULE UNDER OUTDOOR WORKING CONDITION	N. Kato[1], Y. Takeda[1], K. Higuchi[1], A. Takeichi[1], E. Sudo[1], H. Tanaka[1], T. Motohiro[1], T. Sano[2] and T. Toyoda[2]	[1]TOYOTA CENTRAL R&D LABS., INC., Japan, [2]AISIN SEIKI Co., Ltd., Japan
3O-A2-04		PROPOSAL FOR HIGH EFFICIENCY DYE SENSITIZED SOLAR CELL STRUCTURE	S. Hayase, Y. Ogomi, Y. Kashiwa and Y. Noma	Kyushu Institute of Technology, Japan
3O-A2-05		HIGH EFFICIENT DYE-SENSITAIZED SOLAR CELLS AND INTEGRATED MODULES	L. Han, N. Koide, A. Fukui, Y. Chiba, A. Islam, R. Komiya, N. Fuke and R. Yamanaka	Sharp Corporation, Japan
3O-A2-06		PHOTOINDUCED ELECTRON INJECTION IN BLACK-DYE-SENSITIZED NANOCRYSTALLINE TIO2 FILMS STUDIED BY TRANSIENT ABSORPTION SPECTROSCOPY	R. Katoh[1], A. Furube[1], M. Kasuya[1], N. Fuke[2], N. Koide[2] and L. Han[2]	[1]National Institute of Advanced Industrial Science and Technology (AIST), Japan, [2]SHARP corporation, Japan

Solar Cells and Related Science & Technologies

Area 4 December 3rd, Monday 10:15-11:30 (Room B)

Chs: E. Maruyama Sanyo Electric Co., Ltd, Japan

L. Feitknecht ersol ThinFilm GmbH, Germany

3O-B2-01		OPTIMIZATION OF INTERFACE STRUCTURES IN CRYSTALLINE SILICON HETEROJUNCTION SOLAR CELLS	H. Fujiwara, T. Koida and M. Kondo	National Institute of Advanced Industrial Science and Technology (AIST), Japan
3O-B2-02		HETEROJUNCTION SOLAR CELL EFFICIENCY IMPROVEMENT ON VARIOUS C-SI SUBSTRATES BY INTERFACE RECOMBINATION MODELLING	S. Olibet1, E. Vallat-Sauvain1, C. Ballif1, L. Korte2 and L. Fesquet1	[1]University of Neuchâtel, Switzerland, [2]Hahn-Meitner-Institut, Germany
3O-B2-03		ADVANCES IN A-SI:H/C-SI HETEROJUNCTION SOLAR CELL FABRICATION AND CHARACTERIZATION	L. Korte, E. Conrad, I. Didschuns, H. Angermann and M. Schmidt	Hahn-Meitner-Institut Berlin GmbH, Germany
3O-B2-04		DOPING INDUCED PASSIVATION LOSSES OF a-Si:H / c-Si HETEROSTRUCTURES	S. De Wolf and M. Kondo	National Institute of Advanced Industrial Science and Technology (AIST), Japan
3O-B2-05		A-SI/C-SI INTERFACE EFFECTS ON PERFORMANCE OF SILICON HETEROJUNCTION SOLAR CELLS	D. Wuu, S. Lien, B. Wu, C. Shen and F. Yu	National Chung Hsing University, Taiwan

PV Industries and Market (2)

Area 8 December 3rd, Monday 10:15-12:00 (Room C)

Chs: I. Kaizuka RTS Corporation, Japan

P. Mints Navigant Consulting, USA

3O-C2-01	Invited	SANYO'S PHOTOVOLTAIC BUSINESS OVERVIEW	K. Wakisaka	SANYO Electric Co., Ltd., Japan
3O-C2-02	Invited	TBD	Z. Shi	Suntech Power Co., Ltd., China
3O-C2-03	Invited	TBD	Y. Tsuo	Motech Industries, Inc., Taiwan
3O-C2-04	Invited	FIRST SOLAR COMPANY OVERVIEW	M. Gloeckler	First Solar, Inc., USA
3O-C2-05	Invited	TBD	B. Sandberg	Q-cells Japan, Japan
3O-C2-06	Invited	GERMANY - THE NUMBER ONE LOCATION FOR BUSINESS IN THE FIELD OF SOLAR ENERGY	D. Wortmann	Invest in Germany GmbH, Germany
3O-C2-07	Invited	ADDED VALUES OF PV SYSTEMS FROM THE SOCIETYS AND UTILITIES VIEWPOINTS	D. Suna, R. Haas and A. Lopez-Polo	Vienna University of Technology, Austria

Opening Ceremony **Chs: H. Okamoto Osaka University, Japan** **D. Flood Vanguard Solar, Inc., USA** **W. Palz World Council for Renewable Energy, Belgium**				
Opening Address **December 3rd, Monday 13:00-13:10 (Main Hall)** **General Chairperson: M. Yamaguchi Toyota TI, Japan**				
Welcome Address-1			T. Ueda	Director-General, Agency for Natural Resources and Energy, Japan
Welcome Address-2			W. Asou (Tentative)	Fukuoka Prefectural Governor
Opening Lecture **December 3rd, Monday 13:40-14:40 (Main Hall)**				
OL-1		A CONVENIENT THROUGHWAY FOR SOLAR ELECTRICITY	T. Tomita	Sharp, Japan
OL-2		RENEWABLE ENERGIES- THE SOLUTION FOR CLIMATECHANGE AND SECURITY OF ENERGY SUPPLY	H. J. Fell	Member of the German Parliament, Germany

Keynote Speech **December 3rd, Monday 15:10-16:40 (Main Hall)** **Chs: H. Fukuda NEDO, Japan** **L. Kazmerski NREL, USA**				
Keynote Speech-1		TRENDS IN JAPAN'S MEASURES FOR PHOTOVOLTAIC POWER GENERATION AND NEW ENERGY	S. Watanabe	Director, Agency for Natural Resources and Energy, Japan
Keynote Speech-2		DEVELOPMENTS IN SILICON SOLAR CELLS	R. Swanson	SunPower, USA
Ch: M. Konagai Tokyo Institute of Technology, Japan **H. Ossenbrink EC-JRC**				
Keynote Speech-3		R&D STATUS AND INDUSTRIALIZATION OF THIN FILM SILICON PHOTOVOLTAICS	J. Meier	Oerlikon Solar Lab, Switzerland

PVSEC Award / PVSEC Special Award **December 3rd, Monday 17:00-17:30 (Main Hall)** **Chs: Y. Hamakawa Ritsumeikan University, Japan** **T. Saitoh TUAT, USA**

2007/11/22

Plenary 1

Area 1 December 4th, Tuesday 8:00-9:30 (Main Hall)
Chs: S. Hayase Kyushu Institute of Technology, Japan
K. Saito AIST, Japan

PL1-1		MESOSCOPIC SOLAR CELLS FOR THE 21st CENTURY	M. Grätzel	Swiss Federal Institute of Technology, Switzerland
PL1-2		ORGANIC PHOTOVOLTAICS – PROGRESS AND PROSPECT ON TECHNOLOGY, APPLICATION AND COMMERCIALIZATION	J. Gui, C. Brabec and S. Spitzer	Konarka Technologies Inc., USA
PL1-3		SILICON-BASED TANDEM AND HOT CARRIER CELLS	M. A. Green	The University of New South Wales, Australia

Plenary 5

Area 5 December 4th, Tuesday 9:30-10:45 (Main Hall)
Chs: T. Nakada Aoyama Gakuin University, Japan
J. R. Sites Colorado State University, USA

PL5-1		CHALCOPYRITE (CIGS) BASED SOLAR CELLS, DEVELOPMENTS AND PRODUCTION IN EUROPE	H. Schock	Hahn-Meitner-Institut Berlin GmbH, Germany
PL5-2		KEY NEAR-TERM R&D ISSUES FOR CONTINUOUS IMPROVEMENT IN CIS-BASED THIN-FILM PV MODULES	K. Kushiya	Showa Shell Sekiyu K. K., Japan
PL5-3		THE NEXT GENERATION IN THIN-FILM PHOTOVOLTAIC PROCESS TECHNOLOGY	J. van Duren, D. Jackrel, F. Jacob, C. Leidholm, A. Pudov, M. Robinson and Y. Roussillon	Nanosolar, USA

Dye Sensitized Solar Cell

Area 1 December 4th, Tuesday 11:00-12:30 (Room A)
Chs: H. Arakawa Tokyo University of Science, Japan
Z. Wang AIST, Japan

4O-A3-01		MOLECULAR DESIGN OF COUMARIN DYES FOR EFFICIENT DYE-SENSITIZED SOLAR CELLS	Z. Wang1, Y. Cui1, Y. Dan-oh2, C. Kasada2, A. Shinpo2 and K. Hara1	1National Institute of Advanced Industrial Science and Technology (AIST), Japan, 2Hayashibara Biochemical Laboratories, Inc., Japan
4O-A3-02		SCANNING PROBE MICROSCOPE STUDY OF DYE-SENSITIZED TiO2(110)	A. Sasahara1,2, M. Ikeda1, N. Koide3, L. Han3 and H. Onishi1	1Kobe University, Japan, 2Japan Science and Technology Agency, Japan, 3Sharp Corporation, Japan
4O-A3-03		PHOTOVOLTAIC PROPERTIES OF ORGANIC DYE-SENSITIZED SOLAR CELLS USING MAGNESIUM-MODIFIED TITANIA ELECTRODES	Y. Sazanami1, T. Kadota1, S. Iwamoto1, M. Inoue1, T. Inoue2, T. Hoshi2, K. Shigaki2 and M. Kaneko2	1Kyoto University, Japan, 2Nippon Kayaku Co.,Ltd., Japan
4O-A3-04		ALL-SOLID-STATE IODINE-FREE DYE SENSITIZED SOLAR CELLS	S. Yanagida	Osaka University, Japan
4O-A3-05		HIGH-EFFICIENCY DYE-SENSITIZED SOLAR CELLS BASED ON HIGH-ASPECT-RATIO TITANIA (TiO2) NANOTUBE ARRAYS	C. Bae, H. Yoo and H. Shin	Kookmin University, Korea (South)
4O-A3-06		ORGANIC DYE SENSITIZED SOLID-STATE SOLAR CELLS	A. Konno and G. R. Asoka Kumara	Shizuoka Unversity, Japan

Materials Preparation and Characterization

Area 4 December 4th, Tuesday 11:00-12:35 (Room B)
Chs: A. Takano Fuji Electric Systems Co., Ltd., Japan
C. Teplin National Renewable Energy Lab, USA

4O-B3-01	Invited	FABRICATION OF AMORPHOUS SILICON CARBIDE FILMS USING VHF-PECVD FOR TRIPLE JUNCTION THIN FILM SOLAR CELL APPLICATIONS	I. A. Yunaz, K. Hashizume, S. Miyajima, A. Yamada and M. Konagai	Tokyo Inst. of Technology, Japan
4O-B3-02		MAGNETICALLY ENHANCED MULTI-HOLLOW DISCHARGE PLASMA CVD METHOD FOR DEPOSITING HIGHLY STABLE A-SI: H FILMS	K. Koga, W. M. Nakamura, H. Miyahara and M. Shiratani	Department of Electronics, Kyushu University, Japan
4O-B3-03		LOW TEMPERATURE CONTACTS THROUGH SixNy-ANTIREFLECTION COATINGS FOR INVERTED a Si:H/c Si HETEROCONTACT SOLAR CELLS	F. Wünsch1, D. Klein1, A. Podlasly2, A. Ostmann2, M. Schmidt1 and M. Kunst1	1Hahn-Meitner-Institut, Germany, 2Fraunhofer IZM, Germany
4O-B3-04		WIDE-OPTICAL BANDGAP WITH IMPROVED CONDUCTIVITY p-µc-Si:Ox:H FILMS PREPARED BY Cat-CVD	Y. Matsumoto and M. Ortega	CINVESTAV-IPN, Mexico
4O-B3-05		DAMP HEAT STABILITY OF LPCVD ZNO:B	J. Steinhauser1, S. Faÿ1, D. Zimin2, U. Kroll3 and C. Ballif1	1University of Neuchâtel, Switzerland, 2OC Oerlikon Balzers AG, Liechtenstein, 3Oerlikon Solar-Lab SA, Switzerland
4O-B3-06		MEASUREMENT OF EXCESS CARRIER LIFETIME IN EPITAXIAL SILICON THIN FILMS	M. Shanmugam1, M. F. Baroughi1, R. S. Tarighat2 and S. Sivoththaman2	1South Dakota State University, USA, 2University of Waterloo, Canada

Thin Film Process and Characterization Area 5 December 4th, Tuesday 11:00-12:30 (Room C) Chs: C. Kaufmann Hahn-Meitner-Institut Berlin, Germany S. Niki AIST, Japan				
4O-C3-01		LARGE GRAIN Cu(In,Ga)Se2 THIN FILM GROWTH USING A Se-RADICAL BEAM SOURCE	S. Ishizuka, A. Yamada, H. Shibata, P. Fons, K. Sakurai, K. Matsubara and S. Niki	National Institute of Advance Industrial Science and Technology (AIST), Japan
4O-C3-02		GROWTH OF CIGS THIN FILMS USING CRACKED SELENIUM	M. Kawamura, T. Nakashiba, Y. Chiba, A. Yamada and M. Konagai	Tokyo Institute of Technology, Japan
4O-C3-03		HIGH EFFICIENCY CIGS THIN FILM SOLAR CELLS BY LASER-ASSISTED DEPOSITION TECHNIQUE	Y. Ishii, J. Hirata, T. Mise and T. Nakada	Aoyama Gakuin University, Japan
4O-C3-04		OPEN-SAPCE SELENIZATION FABRICATING CIGS ABSORBER WITH Ar AND H2	T. Yu, B. Li, F. Li, Q. He, C. Li, Z. Zhou, C. Shi, G. Liu and Y. Sun	Nankai University, China (PRC)
4O-C3-05		DEVELOPMENT OF Cu2ZnSnS4 THIN FILMS AND SOLAR CELLS: AN APPROACH FROM EPITAXIAL GROWTH	K. Oishi, G. Saito, M. Nagahashi, K. Jimbo, W. Maw, H. Katagiri, M. Yamazaki, H. Araki and A. Takeuchi	Nagaoka National College of Technology, Japan
4O-C3-06		ANNEALING EFFECT ON ELECTRICAL PROPERTIES OF Cu(In,Ga)Se2 THIN FILMS	T. Sakurai1, M. D. Islam1, S. Ishizuka2, N. Ishida1, A. Kasai1, K. Matsubara2, K. Sakurai2, A. Yamada2, S. Niki2 and K. Akimoto1	1University of Tsukuba, Japan, 2National Institute of Advanced Industrial Science and Technology (AIST), Japan

Dye Sensitized Solar Cell Area 1 December 4th, Tuesday 14:00-15:30 (Room A) Chs: T. Miyasaka Toin University of Yokohama, Japan A. Konno Shizuoka University, Japan				
4O-A4-01		CARBON-BASED SOLIDIFICATION OF DYE-SENSITIZED SOLAR CELLS AND APPLICATIONS TO PLASTIC CELL ASSEMBLING	T. Miyasaka, N. Ikeda and M. Ikegami	Toin University of Yokohama, Japan
4O-A4-02		POSSIBLE LARGE SIZED SOLAR CELLS USING METALLIC TITANIUM SHEET AS A SUBSTRATE FOR A PHOTOELECRODE OF DYE SENSITIZED SOLAR CELLS	K. Onoda, S. Ngamsinlapasathian and S. Yoshikawa	Kyoto University, Japan
4O-A4-03		EFFECT OF SURFACE MODIFICATION ON THE PHOTOVOLTAIC PROPERTIES OF CDSE QUANTUM DOT-SENSITIZED TIO2 INVERSE OPAL SOLAR ELLS	L. J. Diguna, Q. Shen, J. Kobayashi, T. Toyoda	The University of Electro-Communications, Japan
4O-A4-04		PLASTIC SOLAR CELLS EMPLOYING ELECTRODEPOSITED ZNO AND ORGANIC PHOTOSENSITIZER DYES	T. Yoshida1, M. Matsui1, K. Funabiki1, H. Miura2 and Y. Fujishita3	1Gifu University, Japan, 2Chemicrea Inc., Japan, 3Sekisui Jushi Corp., Japan
4O-A4-05		IMPROVEMENT IN DURABILITY OF FLEXIBLE PLASTIC DYE-SENSITIED SOLAR CELL MODULES	M. Ikegami1, K. Teshima2 and T. Miyasaka1,2	1Toin University of Yokohama, Japan, 2Peccell Technologies, Inc., Japan
4O-A4-06		THEORETICAL STUDY OF TWO-PHOTON ABSORPTION PROPERTIES OF ORGANIC CONJUGATED MATERIALS FOR PHOTOVOLTAIC DEVICES	W. Wang1, V. Khadka2, Z. Hu1,2, X. Yan1,2, M. Ropp1,2 and D. Galipeau1,2	1South Dakota State University, USA, 2PANS Research Cluster, USA

Materials Preparation and Characterization Area 4 December 4th, Tuesday 14:00-15:35 (Room B) Chs: T. Takagi IHI Corporation, Japan J. Bailat University of Neuchâtel, Switzerland				
4O-B4-01	Invited	ULTRAFAST DEPOSITION OF MICROCRYSTALLINE SILICON FILMS USING HIGH DENSITY MICROWAVE PLASMA	H. Jia1, H. Kuraseko2,3, H. Fujiwara1 and M. Kondo1,3	1National Institute of Advanced Industrial Science and Technology (AIST), Japan, 2The Furukawa Electric Co., Ltd., Japan, 3Tokyo Institute of Technology, Japan
4O-B4-02		LARGE-AREA HIGH-SPEED DEPOSITION OF μc-Si THIN FILMS BY 915 MHz SURFACE WAVE PLASMA	H. Sugai1, T. Ishijima2, H. Toyoda2, A. Masuda3 and M. Kondo3	1Chubu University, Japan, 2Nagoya University, Japan, 3National Institute of Advanced Industrial Science and Technology, Japan
4O-B4-03		INCREASED DEPOSITION RATES OF μC-SI I-LAYERS DEPOSITED WITH VHF-PECVD UNDER HIGH-PRESSURE CONDITIONS AND THE INFLUENCE ON SOLAR CELL PERFORMANCE	A. Gordijn, A. Pollet-Villard, A. Lambertz and F. Finger	Forschungszentrum Juelich GmbH, Germany
4O-B4-04		DEVELOPMENT OF EFFICIENT PRODUCTION TECHNOLOGY OF THIN FILM SILICON SOLAR CELLS USING A LOCALIZED PLASMA CONFINEMENT (LPC)-CVD METHOD	Y. Aya, M. Matsumoto, K. Murata, S. Ogasahara, M. Nakagawa, A. Terakawa and M. Tanaka	Sanyo Electric Co., Ltd., Japan
4O-B4-05		ALUMINUM INDUCED CRYSTALLIZATION OF AMORPHOUS SILICON FOR THIN FILM SILICON SOLAR CELLS	H. Kuraseko1, N. Orita1, H. Koaizawa1 and M. Kondo2	1The Furukawa Electric Co, Ltd., Japan, 2AIST, Japan

Buffer and Interface Area 5 December 4th, Tuesday 14:00-15:35 (Room C) Chs: H. W. Schock Hahn-Meitner-Institut Berlin, Germany A. Yamada Tokyo Institute of Technology, Japan				
4O-C4-01	Invited	STUDY OF BAND ALIGNMENT AT CBD-ZnS(O, OH)/CIGS INTERFACE BY PES/IPES	N. Terada1,2, H. Kashiwabara1, S. Teshima1, T. Okuda1, K. Obara1, T. Yagioka3 and T. Nakakda3	1Kagoshima University, Japan, 2AIST, Japan, 3Aoyama Gakuin University, Japan
4O-C4-02		PHYSICAL VAPOUR DEPOSITION OF COMPOUND INDIUM SULPHIDE AS BUFFER LAYER IN CU(IN,GA)SE2 SOLAR CELLS: MATERIAL CHARACTERISATION AND DEVICE PERFORMANCE	P. Pistor1, R. Caballero1, D. Hariskos2, V. Izquierdo-Roca3, R. Wächter4 and Reiner Klenk1	1Hahn-Meitner-Institut, Germany, 2Zentrum fuer Sonnenenergie-und Wasserstoff-Forschung, Germany, 3Universitat de Barcelona, Spain, 4Würth Solar GmbH & Co. KG, Germany
4O-C4-03		IMPROVED INTERFACE QUALITY BETWEEN MOCVD-ZNO BUFFER AND CIS-BASED ABSORBER	K. Tabuchi, Y. Fujiwara, H. Hakuma and K. Kushiya	Showa Shell Sekiyu K. K., Japan
4O-C4-04		CIGS SOLAR CELL WITH MBE GRWON ZNS BUFFER LAYER	M. M. Islam1, S. Ishizuka2, A. Yamada2, K. Sakurai2, S. Niki2, T. Sakurai1 and K. Akimoto1	1The University of Tsukuba, Japan, 2National Institute of Advanced Industrial Science and Technology (AIST), Japan
4O-C4-05		EFFECTS OF CdS BUFFER LAYERS ON PHOTOLUMINESCENCE PROPERTIES OF Cu(In,Ga)Se2 SOLAR CELLS	S. Shirakata1, K. Ohkubo1, Y. Ishii2 and T. Nakada2	1Ehime University, Japan, 2Aoyama Gakuin University, Japan
4O-C4-06		CHARACTERIZATION OF ELECTRONIC STRUCTURE OF GRAIN BOUNDARY IN CBD-CdS/CIGS BY UHV-KPFM	K. Masamoto1, Y. Watanabe1, H. Kashiwabara1, T. Okuda1, K. Sakurai2, A. Yamada2, S. Ishizuka2, K. Matsubara2, S. Niki2, S. Nakamura3, Y. Yoshimura3 and N. Terada1,2	1Kagoshima Univ., Japan, 2AIST, Japan, 3Kagoshima Pref. Inst. of Industrial Technology, Japan

Dye Sensitized Solar Cell and Organic Thin Film Solar Cell Area 1 December 4th, Tuesday 16:00-17:45 (Room A) Chs: L. Han SHARP Corporation, Japan S. Yoshikawa Kyoto University, Japan				
4O-A5-01		BACK CONTACT DYE-SENSITIZED SOLAR CELLS	N. Fuke, A. Fukui, Y. Chiba, R. Komiya, R. Yamanaka and L. Han	Sharp Corporation, Japan
4O-A5-02		PVDF-HFP/TiO2 COMPOSITE MEMBRANE ELECTROLYTES FOR DYE-SENSITIZED SOLAR CELLS	H. Yang, O. A. Ileperuma, M. Shimomura and K. Murakami	Shizuoka Unversity, Japan
4O-A5-03		ORIGIN OF THE OPEN-CIRCHIT VOLTAGE OF THE ORGANIC THIN-FILM SOLAR CELLS BASED ON CONJUGATED POLYMERS	T. Yamanari1, T. Taima1, J. Sakai2 and K. Saito1	1National Institute of Advanced Industrial Science and Technology (AIST), Japan, 2Matsushita Electric Works, Japan
4O-A5-04		SCANNING NEAR-FIELD AND CONFOCAL RAMAN MICROSCOPIC INVESTIGATION OF DIFFERENT MOLECULAR WEIGHT P3HT AND TIO2 SYSTEMS FOR PHOTOVOLTAIC DEVICES	M. Wu, H. Lo, S. Chen, Y. Huang, Y. Chen, C. Chen and W. Su	National Taiwan University, Taiwan
4O-A5-05		A MICRON SIZE CHARACTERISATION OF ORGANIC SOLAR CELL BLEND FILMS	S. Cook, R. Katoh and A. Furube	National Institute of Advanced Industrial Science and Technology (AIST) , Japan
4O-A5-06		THE SUPRA-HIERARCHICAL NANO-STRUCTURED CELL AS A FEASIBLE HIGH PERFORMANCE ORGANIC THIN-FILM SOLAR CELL	S. Yoshikawa	Kyoto University, Japan

Special Session of Japanese Industrial Sectors Area 4 December 4th, Tuesday 16:00-17:20 (Room B) Chs: M. Isomura Tokai University, Japan A. Masuda AIST, Japan				
4O-B5-01	Invited	REQIREMENTS FOR TCO SUBSTRATE IN SI-BASED THIN FILM SOLAR CELLS - TOWARD TANDEM	T. Oyama, N. Taneda, M. Kambe, K. Sato	Asahi Glass Co., Ltd., Japan
4O-B5-02	Invited	TCO COATED GLASS PRODUCTS FOR THE THIN FILM SILICON PV INDUSTRY	M. Hirata and M. Hyodo	NIPPON SHEET GLASS CO., LTD, Japan
4O-B5-03	Invited	PRODUCTION AND APPLICATION OF FILM SOLAR CELLS	R. Sakai, T. Ishikawa, S. Kawano, M. Shimosawa, T. Nakamura, A. Takano, T. Kamoshita, M. Miyagi and J. Saito	Fuji Electric Systems Co., Ltd., Japan
4O-B5-04	Invited	ENHANCEMENT OF LIGHT TRAPPING IN THE THIN FILM SILICON HYBRID SOLAR CELLS	M. Ichikawa, T. Meguro, F. Sezaki and K. Yamamoto	Kaneka Corporation, Japan
4O-B5-05	Invited	THIN FILM SILICON SOLAR CELL AND MODULE APPLICATIONS	K. Nomoto	Sharp Corporation, Japan

Cell Fabrication and Modeling Area 5 December 4th, Tuesday 16:00-17:35 (Room C) Chs: V. Kapur International Solar Electric Technology Inc. (ISET), USA T. Negami Matsushita Electric Works, Ltd., Japan				
4O-C5-01	Invited	VOLTAGE LIMITATIONS FOR CIGS AND CdTe SOLAR CELLS	J. R. Sites	Colorado State University, USA
4O-C5-02		EFFECT OF MODIFIED STRUCTURE OF MOLYBDENUM BACK CONTACT ON CU(IN,GA)SE2 PREFERRED ORIENTATION	D. Shin1, M. Kim1, J. Yun2 and B. Ahn1	1Korea Advanced Institute of Science and Technology, Korea (South), 2Korea Institute of Energy Research, Korea (South)
4O-C5-03		EFFECTS OF THE MORPHOLOGY OF Mo BACK CONTACT ON THE CELL PERFORMANCE OF CIGS DEVICES	T. Morimoto, T. Mise and T. Nakada	Aoyama Gakuin University, Japan
4O-C5-04		SUPPRESSING ZINC DIFFUSION FROM ZNO BACK CONTACTS IN BIFACIAL CIGS SOLAR CELLS	K. Sakurai1, M. Yonemura2, S. Ishizuka1, H. Nakanishi2 and S. Niki1	1AIST, Japan, 2Tokyo Univ. of Science, Japan
4O-C5-05		EFFECT OF COMPOSITION GRADIENT IN CU(IN,AL)SE2 SOLAR CELLS	T. Hayashi, T. Minemoto, K. Tanaka, S. Yamada, T. Araki and H. Takakura	Ritsumeikan University, Japan
4O-C5-06		DEPTH PROFILING OF CIGS THIN FILMS GROWN AT LOW TEMPERATURES	C. A. Kaufmann, R. Caballero, T. Unold, R. Hesse, M. Nichterwitz and H. W. Schock	Hahn-Meitner-Institut Berlin GmbH, Germany

Plenary 3 Area 3 December 5th, Wednesday 8:30-9:30 (Main Hall) Chs: R. Swanson SunPower Corporation, USA T. Saitoh Tokyo University of Agriculture and Technology, Japan				
PL3-1		MASS-PRODUCTION PROCESS FOR 18.0% HIGH EFFICIENCY MULTI-CRYSTALLINE SILICON SOLAR CELL	H. Morikawa, T. Sato, S. Matsuno and S. Arimoto	Mitsubishi Electric Corporation, Japan
PL3-2		ADVANCES IN HIGH EFFICIENCY CRYSTALLINE SILICON SOLAR CELLS	G. Willeke, S. Glunz and O. Schultz	Fraunhofer ISE, Germany
PL3-3		EMITTER-WRAP-THROUGH BACK-CONTACT MULTICRYSTALLINE-SILICON SOLAR CELLS AND MODULES	J. M. Gee, P. Hacke and M. Hilali	Advent Solar, Inc., USA

Plenary 4 Area 4 December 5th, Wednesday 9:30-10:30 (Main Hall) Chs: S. Nonomura Gifu University, Japan R. Schropp Utrecht University, The Netherlands				
PL4-1		THIN FILM SILICON SOLAR CELLS: LATEST DEVELOPMENT AND FUTURE PROSPECT	M. Kondo	National Institute of Advanced Industrial Science and Technology (AIST), Japan
PL4-2		THIN FILM SILICON SOLAR CELLS: LATEST DEVELOPMENTS IN EUROPE	J. Bailat, D. Dominé, P. Buehlmann, A. Billet, A. Feltrin, F. Meillaud, T. Söderström, X. Niquille, F. J. Haug, V. Daudrix-Terrazzoni, N. Wyrsch and C. Ballif	Université de Neuchâtel, Switzerland
PL4-3		TOWARD FILM CRYSTAL SILICON ON GLASS FOR PHOTOVOLTAICS: PROGRESS ON EPITAXY AND INSIGHTS INTO CVD DEPOSITION	C. W. Teplin, P. Stradins, Q. Wang, K. M. Jones, C. Jiang, V. Yost and H. M. Branz	National Renewable Energy Laboratory, USA

Crystal Growth, Impurities and Defects in Si Area 3 December 5th, Wednesday 11:00-12:30 (Main Hall) Chs: N. Usami Tohoku University, Japan M. Hofmann Fraunhofer-Institut für Solare Energiesysteme ISE, Germany				
5O-M1-01		UNIDIRECTIONAL SOLIDIFICATION GROWTH OF MULTICRYSTALLINE SILICON USING ACCELERATED CRUCIBLE ROTATION TECHNIQUE (ACRT)	R. Bairava Ganesh1,2, H. Matsuo1, Y. Kangawa1, K. Arafune3, Y. Ohshita3, M. Yamaguchi3 and K. Kakimoto1	1Kyushu University, Japan, 2Anna University, India, 3Toyota Technological Institute, Japan
5O-M1-02		INNOVATIVE CRYSTALLISATION OF MULTI-CRYSTALLINE SILCION	R. Einhaus1, J. Kraiem1 and F. Lissalde2	1APOLLON SOLAR, France, 2CYBERSTAR, France
5O-M1-03		FLOATING CAST METHOD (FCM) AS A NEW GROWTH METHOD TO REALIZE HIGH-QUALITY BULK MULTICRYSTALLINE SILICON FOR SOLAR CELLS	I. Takahashi1, N. Usami1, R. Yokoyama1, Y. Nose2, K. Fujiwara1 and K. Nakajima1	1Tohoku University, Japan, 2Kyoto University, Japan
5O-M1-04		FE MAPPING IMAGES OF MC-SILICON WAFERS OBSERVED BY MÖSSBAUER MICROSCOPE	Y. Yoshida, K. Sakata, M. Adachi and K. Suzuki	Shizuoka Institute of Science and Technology, Japan
5O-M1-05		QUANTITATIVE ANALYSIS OF GRAIN BOUNDARY RECOMBINATION IN MULTI-CRYSTALLINE SILICON WAFERS	A. R. Burgers1, L. J. Geerligs1, D. H. Macdonald2 and A. Azzizi1	1ECN Solar Energy, The Netherlands, 2Australian National University, Australia
5O-M1-06		IMPROVED SOLAR CELL EFFICIENCIES VIA LOW-TEMPERATURE ANNEALING GUIDED BY THE IRON "TIME-TEMPERATURE-TRANSFORMATION DIAGRAM"	T. Buonassisi1, M. D. Pickett2, S. M. Heald3, B. Lai3 and Z. Cai3	1Massachusetts Institute of Technology, USA, 2University of California, Berkeley, USA, 3Argonne National Laboratory, USA

Organic Thin Film Solar Cell Area 1 December 5th, Wednesday 11:00-12:30 (Room A) Chs: C. Park Yeungnam University, Korea (South) Y. Nishikitani Nippon Oil Corporation, Japan				
5O-A6-01		CONTROLLING THE MORPHOLOGY OF NANOCRYSTAL-POLYMER COMPOSITE FOR BULK HETERO-JUNCTION SOLAR CELLS	T. N. T. Nguyen, U. Farva, Y. Kim, Y. Na and C. Park	Yeungnam University, Korea (South)
5O-A6-02		APPLICATION OF CARBON NANOMATERIALS FOR SOLAR ENERGY CONVERSION	M. Umeno and P. R. Somani	Chubu University, Japan
5O-A6-03		ORGANIC THIN–FILM SOLAR CELL EMPLOYING A NOVEL ELECTRON-DONOR MATERIAL	H. Kanno, M. Shirakawa, D. Fujishima, T. Kinoshita, H. Sakata, E. Maruyama and M. Tanaka	Sanyo Electric Co., Ltd., Japan
5O-A6-04	Invited	SYNTHESIS OF HIGHLY REGIOREGULAR POLY[(2-METHOXY-5-ALKYLOXY)-1,4-PHENYLENEVINYLENE]S (PPVS) BY HORNER REACTION AND THEIR APPLICATION FOR EFFICIENT PHOTOVOLTAIC DEVICES	K. Tajima, Y. Suzuki and K. Hashimoto	The University of Tokyo, Japan
5O-A6-05		SPONTANEOUS FORMATION OF BUFFER LAYERS IN ORGANIC SOLAR CELLS	Q. Wei, K. Tajima and K. Hashimoto	The University of Tokyo, Japan

Fundamental Science and Innovative Concepts Area 4 December 5th, Wednesday 11:00-12:35 (Room B) Chs: H. Fujiwara AIST, Japan S. Higashi Hiroshima University, Japan				
5O-B6-01	Invited	LIGHT SCATTERING EFFECTS OF HIGHLY TEXTURED TRANSPARENT CONDUCTIVE OXIDES FILMES	N. Taneda, T. Oyama and K. Sato	Asahi Glass Co., Ltd., Japan
5O-B6-02		HIGH MOBILITY HYDROGEN-DOPED IN2O3 TRANSPARENT CONDUCTIVE OXIDE FOR A-SI:H/C-SI HETEROJUNCTION SOLAR CELLS	T. Koida, H. Fujiwara and M. Kondo	National Institute of Advanced Industrial Science and Technology (AIST), Japan
5O-B6-03		BACK SURFACE REFLECTOR WITH PERIODIC TEXTURES FABRICATED BY SELF-ORDERING PROCESS FOR LIGHT TRAPPING IN MICROCRYSTALLINE SILICON SOLAR CELLS	H. Sai, H. Fujiwara and M. Kondo	National Institute of Advanced Industrial Science & Technology (AIST), Japan
5O-B6-04		THE NUCLEATION AND GRAIN GROWTH OF HIGH-GROWTH-RATE (7 NM/S) MICROCRYSTALLINE SILICON PHOTOVOLTAIC FILMS	S. Nakano, W. Yoshida, Y. Sobajima, T. Toyama and H. Okamoto	Osaka University, Japan
5O-B6-05		HIGH QUALITY POLYCRYSTALLINE SILICON FILMS WITH LONG CARRIER LIFETIME PREPARED BY FLASH LAMP ANNEALING OF CAT-CVD AMORPHOUS SILICON AND SUCCESIVE HIGH-PRESSURE WATER VAPOR ANNEALING	Y. Endo, T. Fujiwara, S. Nishizaki, K. Ohdaira, K. Nishioka and H. Matsumura	Jpn. Adv. Inst. Sci. & Tech. (JAIST), Japan
5O-B6-06		TWO-DIMENSIONAL PHOTON-COUNTING LASER-LIGHT-SCATTERING METHOD FOR DETECTING NANO-PARTICLES IN CVD PLASMAS	S. Iwashita, M. Morita, K. Koga and M. Shiratani	Kyushu University, Japan

Grid Connected Systems Area 7 December 5th, Wednesday 11:00-12:30 (Room C) Chs: K. Komoto Mizuho Information & Research Institute, Inc., Japan G. Makrides University of Cyprus, Cyprus				
5O-C6-01		ECONOMIC ANALYSIS OF 10.56KWp GRID CONNECTED PHOTOVOLTAIC SYSTEMS AT THE UNIVERSITY OF MASSACHUSETTS LOWELL	A. Cultura II and Z. Salameh	University of Massachusetts Lowell, USA
5O-C6-02		STATISTICAL EVALUATION OF VOLTAGE VARIATION OF POWER DISTRIBUTION SYSTEM WITH CLUSTERED RESIDENTIAL PV SYSTEMS	T. Kato, A. Minagata and Y. Suzuoki	Nagoya University, Japan
5O-C6-03		ESTIMATING THE CAPACITY VALUE AND PEAK-SHAVING POTENTIAL OF PHOTOVOLTAICS IN ONTARIO: A CASE-STUDY FOR THE CITY OF TORONTO	S. Pelland1 and I. Abboud2	1CANMET Energy Technology Centre-Varennes, Canada, 2Environment Canada Experimental Studies Division ARQX, Canada
5O-C6-04		INTRODUCTION OF WAKKANAI MEGA-SOLAR PROJECT	S. Miwa, N. Matsuno and H. Mizunaga	Hokkaido Electric Power Co. Ltd., Japan
5O-C6-05		INTRODUCTION OF HOKUTO MEGA-SOLAR PROJECT	H. Konishi, R. Tanaka and T. Shiraki	NTT FACILITIES INC., Japan
5O-C6-06		A POWER QUALITY STUDY OF A PV GRID-CONNECTED SYSTEM DUE TO LOAD CONDITIONS	N. Ruangrotsin, D. Chenvidhya, K. Kirtikara, K. Wattanavichean and E. Pakpairote	King Mongkut's University of Technology Thonburi, Thailand

Passivation, Antireflection
Area 3 December 5th, Wednesday 14:00-15:30 (Main Hall)
Chs: T. Warabisako AIST, Japan
A. Cuevas The Australian National University, Australia

5O-M2-01	Invited	RECENT DEVELOPMENTS IN REAR SURFACE PASSIVATION AT FRAUNHOFER ISE	M. Hofmann, C. Schmidt, S. Kambor, N. Kohn, J. Rentsch, S. Glunz and R. Preu	Fraunhofer Institute for Solar Energy Systems, Germany
5O-M2-02		PASSIVATION OF P-TYPE EMITTERS AND SOLAR CELLS BY ALD GROWN Al2O3	B. Hoex1, J. Schmidt2, A. Merkle2, R. Brendel2, M. C. M. van de Sanden1 and W. M. M. Kessels1	1Eindhoven University of Technology, The Netherlands, 2Institut für Solarenergieforschung Hameln/Emmerthal (ISFH), Germany
5O-M2-03		PREPARATION OF a-SiO:H REAR SIDE PASSIVASION LAYER FOR CAST POLY CRYSTALLINE SILICON SOLAR CELLS	H. Yamamoto1, T. Sugiura1, A. Limmanee1, T. Sato2, S. Miyajima1, A. Yamada1 and M. Konagai1	1Tokyo Institute of Technology, Japan, 2Mitsubishi Electric Corporation, Japan
5O-M2-04		EFFECTIVE SURFACE PASSIVATION OF SCREEN-PRINTED AL-DOPED P+-EMITTERS FOR N-TYPE C-SI SOLAR CELLS USING A-SI	R. Bock, J. Schmidt and R. Brendel	Institut für Solarenergieforschung Hameln/Emmerthal (ISFH), Germany
5O-M2-05		REAR SURFACE SIN PASSIVATED MONOCRYSTALLINE SILICON THIN FILM SOLAR CELLS WITH LASER FIRED PROCESS	Y. Takahashi, A. Ogane, K. Horiuchi, Y. Kishiyama, A. Kitiyanan, Y. Uraoka and T. Fuyuki	Nara Institute of Science and Technology, Japan
5O-M2-06		EXPERIMENTAL COMPARISON OF ALUMINIUM BSF AND OXIDE PASSIVATED REAR SURFACE FOR CRYSTALLINE SILICON SOLAR CELLS	O. Schultz1, A. Mette1,2 and S. W. Glunz1	1Fraunhofer ISE, Germany, 2Q-Cells AG, Germany

Organic Thin Film Solar Cell and Next Generation Inorganic Solar Cell
Area 1 December 5th, Wednesday 14:00-15:30 (Room A)
Chs: T. Kitamura Fujikura Ltd., Japan
V. Švrček AIST, Japan

5O-A7-01		HIGH EFFICIENCY OF BULK HETERO-JUNCTION SOLAR CELLS	N. Koide1, L. Han1, H. Lee2 and T. Arai2	1SHARP CORPORATION, Japan, 2International Center for Materials Research (ICMR), Japan
5O-A7-02		OPTICAL STUDY OF NANOSTRUCTURE P3HT/PCBM HYBRID PHOTOVOLTAIC DEVICE	Y. Huang, M. Wu, C. Chen and W. Su	National Taiwan University, Taiwan
5O-A7-03		INFLUENCE OF ANNEALING TEMPERATURES ON THE STRUCTURAL AND OPTICAL PROPERTIES OF CdSe NANOPARTICLES	U. Farva, Y. Na and C. Park	Yeungnam University, Korea (South)
5O-A7-04		MODIFICATION OF ELECTRONIC PROPERTIES IN SILICON QUANTUM DOT SUPERLATTICE	E. Cho, X. Hao, S. Park, I. P. Wurfl, G. Conibeer and M. A. Green	University of New South Wales, Australia
5O-A7-05		FABRICATION OF CRYSTALLINE TYPE-CONTROLLED NANOCRYSTALS EMBEDDED IN SIC MATRIX FOR THIRD GENERATION PHOTOVOLTAICS	D. Song, E. Cho, G. Conibeer, G. Scardera and M. A. Green	University of New South Wales, Australia
5O-A7-06		ELECTRICAL PROPERTIES OF N-TYPE SILICON QUANTUM DOTS AND P-TYPE CRYSTALLINE SILICON HETEROJUNCTION DEVICES	S. Park, E. Cho, X. Hao, G. Scardera, D. Song, G. Conibeer and M. A. Green	University of New South Wales, Australia

Solar Cells and Related Science & Technologies
Area 4 December 5th, Wednesday 14:00-15:35 (RoomB)
Chs: K. Yamamoto Kaneka Corporation, Japan
Y. Matsumoto National Polytechnic Institute, Japan

5O-B7-01	Invited	NANOSTRUCTURED THIN FILMS FOR MULTIBANDGAP SILICON TRIPLE JUNCTION SOLAR CELLS	R. E. I. Schropp, H. Li, R. H. J. Franken, J. K. Rath, C. H. M. van der Werf, J. A. Schüttauf, and R. L. Stolk	Utrecht University, The Netherlands
5O-B7-02		THIN FILM SOLAR CELLS BASED ON MICROCRYSTALLINE SILICON-GERMANIUM NARROW GAP ABSORBERS	T. Matsui1, C.W. Chang1, T. Takada1,2, M. Isomura2, H. Fujiwara1 and M. Kondo1	1National Institute of Advanced Industrial Science and Technology (AIST), Japan, 2Tokai University, Japan
5O-B7-03		PERFORMANCE OF SUPERSTRATE MULTIJUNCTION AMORPHOUS SILICON BASED SOLAR CELLS USING OPTICAL LAYERS FOR CURRENT MANAGEMENT	C. Das, M. Berginski, A. Doumit, A. Lambertz, F. Finger, A. Gordijn, H. Stiebig, J. Huepkes, J. Kirchhoff and W. Reetz	Forschungszentrum Juelich, Germany
5O-B7-04		6.3% EFFICIENCY SOLAR CELL EMPLOYING HIGH DEPOSITION RATE (8 NM/S) MICROCRYSTALLINE SILICON PHOTOVOLTAIC LAYER	Y. Sobajima, M. Nishino, T. Fukumori, T. Higuchi, S. Nakano, T. Toyama and H. Okamoto	Osaka University, Japan
5O-B7-05		N/I 'SEED LAYER' FOR N-SIDE ILLUMINATED HIGH-EFFICIENCY N-I-P MICROCRYSTALLINE SILICON SOLAR CELLS WITH HOT WIRE-DEPOSITED MICROCYSTALLINE SILICON CARBIDE WINDOW LAYERS	Y. Huang1, A. Dasgupta1, T. Chen1,2, F. Finger1, A. Gordijn1, M. Luysberg1, L. Houben1 and R. Carius1	1Forschungszentrum Jülich, Germany, 2Zhejiang University, China (PRC)

Grid Connected Systems & Hybrid Systems

Area 7 December 5th, Wednesday 14:00-15:30 (Room C)

Chs: K. Kurokawa Tokyo University of Agriculture and Technology, Japan

Z. Salameh University of Massachusetts Lowell, USA

5O-C7-01	Invited	DEVELOPMENT OF A DISTRIBUTION SYSTEM VOLTAGE CONTROL METHOD FOR PV SYSTEMS – A NEW REACTIVE POWER CONTROL METHOD FOR RESTRAINING VOLTAGE RISE –	Y. Hirabaru, H. Hatta and H. Kobayashi	Central Research Institute of Electric Industry, Japan
5O-C7-02		OPERATION DESIGN OF STORAGE BATTERY STATION IN PV CLUSTER	S. Wakao and A. Otani	Waseda University, Japan
5O-C7-03		OPERATING CONTROL STRATEGIES FOR AUTONOMOUS PHOTOVOLTAIC SYSTEMS AND HYBRID PV MINI-GRIDS — OVERVIEW ON ADJUSTED SOLUTIONS FOR DIFFERENT APPLICATIONS	M. Vetter, G. Bopp and S. Schwunk	Fraunhofer Institute for Solar Energy Systems ISE, Germany
5O-C7-04		VERIFICATION OF PROPOSED ACTIVE OPERATION OF POWER GRID WITH PV SYSTEMS BY SCALED-DOWN DISTRIBUTION NETWORK EQUIPMENT	Y. Hayashi1, S. Sakai1, J. Matsuki1, Y. Fuwa2 and K. Mori2	1 University of Fukui, Japan, 2 Tokyo Electric Power Company, Japan
5O-C7-05		BREAKTHROUGH TO A NEW ERA OF PV-HYBRID SYSTEMS WITH THE HELP OF STANDARDISISED COMPONENTS COMMUNICATION	M. Müller1 and G. Bopp2	1Steca Gmbh, Germany, 2Fraunhofer Institut Solare Energiesysteme ISE, Germany

Modeling, Characterization

Area 3 December 5th, Wednesday 16:00-17:30 (RoomM)

Chs: S. Arimoto Mitsubishi Electric Corporation, Japan

Y. Ma IMEC vzw, Belgium

5O-M3-01		SIMULATING SUNS-VOC SILICON SOLAR CELL CHARACTERISATION WITH A NEW QSS-MODEL	A. Cuevas and J. Tan	The Australian National University, Australia
5O-M3-02		ANALYSIS OF N-TYPE MULTICRYSTALLINE SILICON WAFERS FOR SOLAR CELLS BY PHOTOLUMINESCENCE IMAGING WITH HF IMMERSION	H. Sugimoto1, M. Tajima1, I. Yamaga2, M. Dhamrin3, K. Kamisako3 and T. Saitoh3	1ISAS/JAXA, Japan, 2Dai-ichi Kiden Co., Japan, 3TUAT, Japan
5O-M3-03		TEMPERATURE-DEPENDENT ELECTROLUMINESCENCE CHARACTERISATION OF SILICON SOLAR CELLS	K. Bothe1, D. Hinken1, K. Ramspeck1, A. Kitoiyanan2 and T. Fuyuki2	1Institut für Solarenergieforschung Hameln/Emmerthal (ISFH), Germany, 2Nara Institute of Science and Technology (NAIST), Japan
5O-M3-04		SERIES RESISTANCE IMAGING OF SOLAR CELLS BY VOLTAGE DEPENDENT ELECTROLUMINESCENCE	D. Hinken1, K. Bothe, K. Ramspeck and R. Brendel	Institut für Solarenergieforschung Hameln/Emmerthal (ISFH), Germany
5O-M3-05		RECOMBINATION CURRENT AND SERIES RESISTANCE IMAGING ON MULTICRYYSTALLINE SILICON SOLAR CELLS	K. Ramspeck, K. Bothe, D. Hinken, J. Schmidt, B. Fischer and R. Brendel	Institut für Solarenergieforschung Hameln (ISFH), Germany
5O-M3-06		NEW CONCEPT TO IMPROVE THE SPECIFIC CONTACT RESISTANCE AND FINGER CONDUCTIVITY OF THE SCREEN-PRINTED AG METAL CONTACTS FOR THE SILICON SOLAR CELLS	P. N. Vinod	Naval Physical and Oceanographic Laboratory, India

Next Generation Inorganic Solar Cell

Area 1 December 5th, Wednesday 16:00-17:45 (Room A)

Ch: M. Umeno Chubu University, Japan

D. Kim Korea University, Japan

5O-A8-01	Invited	PROGRESS ON HOT CARRIER CELLS	G. Conibeer1, J. F. Guillemoles2, D. Kőnig1, S. Shrestha1 and M. A. Green1	1ARC Photovoltaics Centre of Excellence, Australia, 2 IRDEP: joint CNRS-EDF-ENSCP, France
5O-A8-02		NITROGEN INCORPORATION IN C60 FILMS FOR THE PHOTOVOLTAIC APPLICATION	S. M. Mominuzzaman1,2, T. Soga1, and T. Jimbo1	1Nagoya Institute of Technology, Japan, 2Bangladesh University of Engineering and Technology, Bangladesh
5O-A8-03		IMPACT OF INTERFACE ON THE EFFECTIVE BAND GAP OF Si QUANTUM DOTS	D. König, J. Rudd, M. A. Green and G. Conibeer	The University of New South Wales, Australia
5O-A8-04		LUMINSECENT PROPERTIES OF DOPED FREESTANDING SILICON NANOCRYSTALS EMBEDDED IN MEH-PPV	V. Švrček, H. Fujiwar and M. Kondo	National Institute of Advanced Industrial Science and Technology (AIST), Japan
5O-A8-05		STRUCTURAL, OPTICAL AND ELECTRICAL PROPERTIES OF INDIUM SULFIDE THIN FILMS DEPOSITED BY PULSED ELECTROCHEMICAL DEPOSITION	A. M. Abdel Haleem and M. Ichimura	Nagoya Institute of Technology, Japan
5O-A8-06		ZINC OXIDE NANOROD ARRAYS FOR SOLAR CELLS WITH EXTREMELY THIN SULFIDIC ABSORBER	A. Belaidi1, Th. Dittrich1, D. Kieven1, J. Tornow1, K. Schwarzburg1, M. Kunst1, N. Allsop1 and S. Gavrilov2	1Hahn-Meitner-Institut, Germany, 2Moscow Institute of Electronic Technology, Russia

Solar Cells and Related Science & Technologies Area4 December 5th, Wednesday 16:00-17:35 (Room B) Chs: M. Shiratani Kyushu University, Japan T. Toyama Osaka University, Japan				
5O-B8-01	Invited	DEVELOPMENT OF HIGH EFFICIENCY MICROMORPH TANDEM SOLAR CELLS ON FLEXIBLE LOW COST PLASTIC SUBSTRATES	F. J. Haug, V. Terrazzoni-Daudrix, T. Söderström, X. Niquille and C. Ballif	University of Neuchâtel, Switzerland
5O-B8-02		MONOLITHIC SERIES INTERCONNECTION OF THIN-FILM SILICON SOLAR CELLS ON FLEXIBLE SUBSTRATES	J. Löffler1, C. Ballif2, K. Brecl3, K. Brooks4, C. Finck5, D. Fischer4, F. J. Haug2, R. Mayerhofer5, W. J. Soppe1, M. Späth1, M. Topic3 and M. Wutz5	1ECN, The Netherlands, 2University of Neuchâtel, Switzerland, 3University of Ljubljana, Slovenia, 4 VHF Technologies S.A., Switzerland, 5Rofin / Baasel Lasertech, Germany
5O-B8-03		EXPERIMENTAL STUDIES OF THE LIGHT TRAPPING AND OPTICAL LOSSES IN MICROCRYSTALLINE SILICON SOLAR CELLS	M. Berginski1, J. Hüpkes1, A. Gordijn1, W. Reetz1 and M. Wuttig2	1Forschungszentrum Jülich GmbH, Germany, 2RWTH Aachen University, Germany
5O-B8-04		POLYCRYSTALLINE SILICON THIN-FILM SOLAR CELLS ON GLASS	S. Gall, C. Becker, E. Conrad, P. Dogan, F. Fenske, B. Gorka, K. Y. Lee, B. Rau, F. Ruske and B. Rech	Hahn-Meitner-Institut Berlin, Germany
5O-B8-05		A-SI:H SINGLE JUNCTION AND A-SI:H/UC-SI:H TANDEM SOLAR CELLS FABRICATED USING LARGE AREA (GEN8 SIZE) PECVD SYSTEMS	L. Li, Y. Chae, S. Sheng, T. Won, A. Kadam, J. Chen, S. Choi and J. M. White	AKT/Applied Materials, USA
5O-B8-06		MILESTONES AND KEY PARAMETERS OF THE 'NOVA' AMORPHOUS SILICON PRODUCTION LINE OF ERSOL THIN FILM	L. Feitknecht and L. Mittelstädt	Ersol Thin Film GmbH, Germany

Grid Connected Systems & PV System Codes and Standards Area 7 December 5th, Wednesday 16:00-17:30 (Room C) Chs: S. Nishikawa Nihon University, Japan K. Kirtikara King Mongkut's University of Technology Thonburi, Thailand				
5O-C8-01	Invited	PERFORMANCE OF GRID CONNECTED PV INVERTERS DURING DISTURBED GRID CONDITIONS - CURRENT STATE OF PLAY & RECOMMENDATIONS FOR OPTIMAL PRODUCT DESIGN	R. Bruendlinger, B. Bletterie and C. Mayr	arsenal research, Austria
5O-C8-02		AN ANALYSIS OF ELECTRICITY COST OF PHOTOVOLTAIC SYSTEMS ON THE FIELD TEST PROJECT IN JAPAN	T. Oozeki1, T. Yamada1, K. Kato1 and T. Yamamoto2	1National Institute of Advanced Industrial Science and Technology, Japan, 2New Energy and Industrial Technology Development Organization (NEDO), Japan
5O-C8-03		UNCERTAINTY IN MEASURED PERFORMANCE PHOTOVOLTAIC PERFORMANCE PARAMETERS – DEPENDENCE ON LOCATION AND MATERIAL	M. B. Strobel1, R. Gottschalg1, G. Friesen2 and H. G.Beyer3	1Loughborough University, UK, 2SUPSI-LEEE, Switzerland, 3Hochschule Magdeburg-Stendal, Germany
5O-C8-04		GRID COMPATIBILITY OF DISTRIBUTED PHOTOVOLTAIC SYSTEMS	G. H. Atmaram	Florida Solar Energy Center, USA
5O-C8-05		PERFORMANCE ANALYSIS OF VARIOUS SYSTEM CONFIGURATIONS ON GRID-CONNECTED RESIDENTIAL PV SYSTEMS	Y. Ueda1, K. Kurokawa1, K. Kitamura2, M. Yokota3, K. Akanuma3 and H. Sugihara3	1Tokyo University of Agriculture and Technology, Japan, 2MEIDENSHA CORPORATION, Japan, 3Kandenko co., ltd., Japan
5O-C8-06		TEMPERATURE BEHAVIOUR OF DIFFERENT PHOTOVOLTAIC SYSTEMS INSTALLED IN CYPRUS AND GERMANY	G. Makrides1, B. Zinsser2, G. E. Georghiou1 and J. Werner2	1University of Cyprus, Cyprus, 2Institute of Physical Electronics, Germany

Plenary 2

Area 2 December 6th, Thursday 8:30-9:30 (Main Hall)
Chs: S. Kurtz NREL, USA
A. Yamamoto University of Fukui, Japan

PL2-1		PROGRESS IN HIGH-CONCENTRATION PHOTOVOLTAIC SYSTEMS	J. Luther	Fraunhofer Institute for Solar Energy Sytems ISE, Germany
PL2-2		PRODUCTION AND DEVELOPMENT ACTIVITIES IN MULTIJUNCTION SOLAR CELLS FOR CONCENTRATOR PHOTOVOLTAICS	D. D. Krut, R. R. Kindg, G. S. Kinsley, P. Pien, P. Hebert, R. A. Sherif, J. Lacey, R. Brandt, N. H. Karam and B. T. Cavicchi	Spectrolab, Inc., USA
PL2-3		OVERVIEW OF HIGH EFFICIENCY III-V CELL ACTIVITIES	T. Takamoto	Sharp Corporation, Japan

Plenary 6

Area 6 December 6th, Thursday 9:30-10:30 (Main Hall)
Chs: Y. Ishihara Doshisha University, Japan
W. Bower Sandia National Laboratories, USA

PL6-1		PV MODULE RECYCLING	K. Wambach, S. Schlenker and A. Müller	Deutsche Solar AG, Germany
PL6-2		APPLICATION OF BATTERY TO THE PHOTOVOLTAIC SYSTEM - UTILITY PEAK-SHAVING SYSTEM WITH NI-MH BATTERY	M. Ryoji1 and N. Tokuda2	1Kawasaki Heavy Industries, Ltd., Japan, 2Kawasaki Plant Systems, Ltd., Japan

High Efficiency Solar Cells; Heterojunction, N Type Si

Area 3 December 6th, Thursday 11:00-12:30 (Main Hall)
Chs: H. Fujiwara AIST, Japan
P. Fath GP Solar GmbH, Germany

6O-M4-01	Invited	22%-EFFICIENCY HIT SOLAR CELL	Y. Tsunomura, Y. Yoshimine, M. Taguchi, T. Kinoshita, H. Kanno, H.Sakata, E. Maruyama and M. Tanaka	Sanyo Electric Co., Ltd., Japan
6O-M4-02		HOMOGENEOUS P+ EMITTER DIFFUSED USING BORON TRIBROMIDE FOR RECORD 15.6% SCREEN PRINTED LARGE AREA N-TYPE MC-SI SOLAR CELL	Y. Komatsu1, V. D. Mihailetchi1, L. J. Geerligs1, B. van Dijk2, J. B. Rem2 and M. Harris2	1ECN Solar Energy, The Netherlands, 2Tempress Systems B.V., The Netherlands
6O-M4-03		A-SI:H/C-SI HETEROJUNCTION SOLAR CELLS ON P-TYPE C-SI WAFERS	P. J. Rostan1, J. Maier1, T. Kirchartz2, U. Rau2, F. Einsele3, R. Merz3, M. B. Schubert3 and J. H. Werner3	1centrotherm photovoltaics technology GmbH, Germany, 2Forschungszentrum Jülich GmbH, Germany, 3Universität Stuttgart, Germany
6O-M4-04		FABRICATION OF N- AND P-TYPE HETEROJUNCTION SOLAR CELLS BY USING HYDROGENATED MICROCRYSTALLINE SILICON OXIDE FILM AS AN EMITTER	J. Sritharathikhun, A. Yamada and M. Konagai	Tokyo Institute of Technology, Japan
6O-M4-05		INTERDIGITATED BACK CONTACT AMORPHOUS/CRYSTALLINE SILICON HETEROJUNCTION SOLAR CELLS	S. De Iuliis1, G. de Cesare2, M. Ceccarelli2, L. Serenelli3, L. J. Geerligs1 and M. Tucci3	1ECN Solar Energy, The Netherlands, 2University “Sapienza”, Italy, 3ENEA Research Center Casaccia, Italy
6O-M4-06		LARGE AREA N-TYPE REAR JUNCTION MULTICRYSTALLINE SILICON SOLAR CELLS	R. H. Franken, F. Dross, E. van Kerschaver and G. Beaucarne	IMEC, v.z.w., Belgium

PV Modules and BOS Components

Area 6 December 6th, Thursday 11:00-12:30 (Room A)
Chs: S. Nishikawa Nihon University, Japan
D. Ton U.S. Department of Energy, USA

6O-A9-01	Invited	DEVELOPMENT OF THIN FILM Si HYBRID SOLAR MODULE	A. Nakajima, M. Gotoh, T. Sawada, S. Fukuda, M. Yoshimi and T. Nomura	Kaneka Corporation, Japan
6O-A9-02		IMPROVEMENT IN LIGHT TRAPPING BY USING TEXTURED COVER GLASSES	W. A. Nositschka, D. Neumann, M. O. Prast and F. Gromball	Saint-Gobain Vitrage Herzogenrath R&D Center, Germany
6O-A9-03		A NOVEL MODULE ASSEMBLY LINE USING BACK CONTACT SOLAR CELLS	M. Späth1, P.C. de Jong1 and J. Bakker2	1ECN Module Technology, The Netherlands, 2TTA / Eurotron, The Netherlands
6O-A9-04		ADVANCING LASER JOINING IN SOLAR MODULE MANUFACTURING	A. Moalem1, A. Schoonderbeek1, R. Kling1 A. Ostendorf1, M. Gast2, R. Grischke2 and R. Brendel2,3	1Laser Zentrum Hannover (LZH), Germany, 2Institut für Solarenergieforschung Hameln/Emmerthal (ISFH), Germany, 3Leibniz Univ. Hannover, Germany
6O-A9-05		DEVELOPMENT OF NEW PACKAGING METHODS FOR CIS-BASED THIN-FILM PV CIRCUITS	H. Nishi1, H. Suzuki2 and K. Kushiya1	1Showa Shell Sekiyu K.K., Japan, 2Showa Shell Solar K.K., Japan
6O-A9-06		ADVANCED INTEGRATED INVERTERS AND ENERGY MANAGEMENT SYSTEMS	W. Bower1, D. Ton2, M. Ropp3, S. Gonzalez1 and J. Torres1	1Sandia National Laboratories, USA, 2US Department of Energy, USA, 3South Dakota State University, USA

III-V Materials and Devices Area 2 December 6th, Thursday 11:00-12:30 (Room B) Chs: N. J. Ekins-Daukes Imperial College London, UK Y. Okada University of Tsukuba, Japan				
6O-B9-01	Invited	STATUS AND ISSUES IN HIGH-EFFICIENCY III-V SOLAR CELLS	S. Kurtz, J. Geisz, W. McMahon, M. Wanlass, K. Jones, R. Reedy, S. Ward, A. Duda, J. Olson, D. Friedman, A. Kibbler, T. Moriarty and J. Kiehl	National Renewable Energy Laboratory, USA
6O-B9-02	Invited	APPLICATION OF GROUP III-NITRIDE ALLOYS FOR MULTIJUNCTION SOLAR CELLS	W. Walukiewicz, J. W. Ager and K. Man Yu	Lawrence Berkeley National Laboratory, USA
6O-B9-03		FABRICATION OF HOMOJUNCTION GaInNAs SOLAR CELLS BY ATOMIC HYDROGEN-ASSISTED MOLECULAR BEAM EPITAXY	Y. Shimizu1,2 , S. Niki2 and Y. Okada1	1University of Tsukuba, Japan, 2National Institute of Advanced Industrial Science and Technology, Japan
6O-B9-04		CHARACTERIZATION OF CARRIER RECOMBINATION IN LATTICE-MISMATCHED INGAAS SOLAR CELLS ON GAAS SUBSTRATES	T. Sasaki1, K. Arafune1, T. Takamoto2, W. Metzger3, M. J. Romero3, K. Jones3, M. Al-Jassim3, Y. Ohshita1 and M.	1Toyota Technological Institute, Japan, 2Sharp Corporation, Japan, 3National Renewable Energy Laboratory, USA
6O-B9-05	Invited	DIAGNOSTIC CHARACTERIZATION OF SPACE SOLAR CELLS AND THEIR MATERIALS BY LUMINESCENCE SPECTROSCOPY AND TOPOGRAPHY	M. Tajima, H. Toyota, H. Sugimoto, K. Yoshida and H. Nakayama	JAXA, Japan

Environmental Issues and LCA Area 8 December 6th, Thursday 11:00-12:30 (Room C) Chs: C. Herig Segue energy Consulting, LLC, USA K. Sakuta AIST, Japan				
6O-C9-01	Invited	A PRELIMINALY LIFE-CYCLE ANALYSIS OF A MEGA-SOLAR SYSTEM IN JAPAN	M. Ito1, M. Kudo2 and K. Kurokawa3	1Tokyo Institute of Technology, Japan, 2NTT Facilities, Inc., Japan, 3Tokyo University of Agriculture and Technology, Japan
6O-C9-02 has been changed to 3O-C2-07 (December 3rd, Monday 10:15-12:00 (Room C))				
6O-C9-03		EVALUATION OF GHG EMISSION REDUCTION POTENTIALS OF PV SYSEMS INTRODUCTION SCENARIOS USING POWER MIX OPTIMIZATION MODELS	Y. Fukushima and Y. Kuo	National Cheng Kung University, Taiwan
6O-C9-04		AN ENVIRONMENTAL POTENTIAL OF PV SYSTEMS IN JAPAN BY UTILIZING THE ECOLOGICAL FOOTPRINT	N. Yamashita1, M. Ito2, K. Komoto3 and K. Kurokawa1	1Tokyo University of Agriculture and Technology, Japan, 2Tokyo Institute of Technology, Japan, 3Mizuho Information & Research Institute, Japan
6O-C9-05		ENVIRONMENTAL POTENTIAL OF VERY LARGE SCALE PHOTOVOLTAIC POWER GENERATION (VLS-PV) SYSTEMS ON DESERTS	K. Komoto1, M. Ito2, N. Yamashita3 and K. Kurokawa3	1Mizuho Information & Research Institute, Inc., Japan, 2Tokyo Institute of Technology, Japan, 3Tokyo University of Agriculture and Technology, Japan

High Efficiency Solar Cells; Back Contact Area 3 December 6th, Thursday 14:00-15:30 (Main Hall) Chs: S. Okamoto SHARP Corporation, Japan J. Gee Advent Solar, Inc., USA				
6O-M5-01	Invited	HIGH EFFICIENCY MULTICRYSTALLINBE SILICON BACK CONTACT SOLAR CELLS	N. Nakatani, T. Sakamoto, K. Fukui and K. Shirasawa	Kyocera Corporation, Japan
6O-M5-02		0.4 % EFFICIENCY GAIN BY NOVEL BACK CONTACT	C. Ehling1, M. B. Schubert1, R. Merz1, P. J. Rostan1,2 and J. H. Werner1	1Universität Stuttgart, Germany, 2centrotherm photovoltaics technology GmbH, Germany
6O-M5-03		INDUSTRIALLY FEASIBLE MULTI CRYSTALLINE METAL WRAP THROUGH (MWT) SILICON SOLAR CELLS EXCEEDING 16 % EFFICIENCY	F. Clement, M. Lutsch, T. Kubera, H. Wirth, C. Harmel, W. Wolke, D. Biro and R. Preu	Fraunhofer Institute for Solar Energy Systems (ISE), Germany
6O-M5-04		UPDATE ON DEVELOPMENT OF BACK CONTACT SI SOLAR CELL IN PILOT PRODUCTION LINE	K. Nakamura, M. Kohira, Y. Abiko, T. Isaka, Y. Funakoshi and T. Machida	Sharp Corporation, Japan
6O-M5-05		HIGH-EFFICIENCY (AVERAGE 16.0%) INDUSTRIAL-TYPE REAR-CONTACTED MULTICRYSTALLINE SILICON SOLAR CELLS	F. Dross1, C. Allebé2, Y. Ma1, H. Dekkers1, G. Agostinelli1, P. Choulat1, X. Loozen1, E. Van Kerschaver1, J. Szlufcik2 and G. Beaucarne1	1IMEC, v.z.w., Belgium, 2Industrial Area West-Grijpen, Belgium
6O-M5-06		IMPROVING SHUNT RESISTANCE IN MC-SILICON MWT SOLAR CELLS	I. Moon and D. Kim	Samsung SDI, Korea

Characterization and Reliability Area 6 December 6th, Thursday 14:00-15:30 (Room A) Chs: K. Sakuta AIST, Japan R. Gottschalg Centre for Renewable Energy Systems Technology, UK				
6O-A10-01	Invited	12 YEARS EXPERIENCE ON PV MODULE TESTING - ENLARGEMENT OF TESTING SERVICES -	W. Vaassen1, W. Herrmann1, J. Althaus1 and C. Dreier2	1 TÜV Rheinland Immissionsschutz und Energiesysteme GmbH, Germany, 2TÜV Rheinland Japan Ltd., Japan
6O-A10-02		DIFFERENCE IN THE OUTDOOR PERFORMANCES OF BULK AND THIN-FILM SILICON BASED PHOTOVOLTAIC MODULES	T. Minemoto, S. Fukushige and H. Takakura	Ritsumeikan University, Japan
6O-A10-03		AN LED-BASED PHOTOVOLTAIC MEASUREMENT SYSTEM WITH VARIABLE SPECTRUM AND FLASH SPEED	M. Bliss, T. R. Betts and R. Gottschalg	Loughborough University, UK
6O-A10-04		MODELING I-V CURVES OF PV MODULES USING LINEAR INTERPOLATION/EXTRAPORATION	Y. Tsuno1,2, Y. Hishikawa1 and K. Kurokawa2	1National Institute of Advanced Industrial Science and Technology (AIST), Japan, 2Tokyo University of Agriculture and Technology (TUAT), Japan
6O-A10-05		PHOTOVOLTAIC MODULE RELIABILITY, FAILURE MECHANISMS AND SERVICE LIFETIME PREDICTION	N. G. Dhere and V. V. Hadagali	Florida Solar Energy Center, USA
6O-A10-06		EXPERIMENTAL STUDIES OF FAULT LOCALIZATON IN PV MODULE STRINGS	T. Takashima1, J. Yamaguchi2, K. Otani1, T. Oozeki1, K. Kato1 and M. Ishida2	1National Institute of Advanced Industrial Science and Technology (AIST), Japan, 2University of Tsukuba, Japan

Concentrator Cells, Modules, and Systems Area 2 December 6th, Thursday 14:00-15:30 (Room B) Chs: W. Walkievicz Lawrence Berkeley National Laboratory, USA T. Takamoto SHARP Corporation, Japan				
6O-B10-01	Invited	LATEST ADVANCES IN MULTI-JUNCTION PV SYSTEM DEVELOPMENT	V. Garboushian, A. Slade and R. Gordon	Amonix Inc., USA
6O-B10-02	Invited	FROM CONCENTRATION TO SIMPLICITY: PACKAGING AND COST CUTTING STRATEGIES FOR SOLID CONCENTRATOR DESIGN	H. Chan	SolFocus, Inc., USA
6O-B10-03		OPERATING CHARACTERISTICS OF MULTIJUNCTION SOLAR CELLS	G. S. Kinsey, P. Pien, P. Hebert and R. A. Sherif	Spectrolab, Inc., USA
6O-B10-04		DEVELOPMENT OF A 1,340 X (GCR) MODULE COMPATIBLE TO THE CURRENT 500 X CPV TRACKERS	K. Araki	Daido Steel, Japan
6O-B10-05	Invited	NOVEL PROPERTIES OF STRAIN-BALANCED QUANTUM WELL CELLS AT CONCENTRATOR CURRENT LEVELS	K. W. J. Barnham1, I. M. Ballard1, B. C. Browne1, C. Calder2, J. C. Connolly1, M. F. Führer1, R. Ginige1, G. Hill2, A. Ioannides1, D. C. Johnson1, M. Mazzer1, J. S. Roberts2 and T. N. D. Tibbits1	1Imperial College London, UK, 2EPSRC III-V National Centre for III-V Technologies, UK

PVPS@PVSEC-17 Area 8 December 6th, Thursday 13:30-15:30 (Room C) Chair: G. Watt Australia PVPS Consortium, Australia Co-Chair: I. Kaizuka RTS Corporation, Japan				
		Welcome and introduction of PVPS	G. Watt	Australia PVPS Consortium, Australia
6O-C10-01	Invited	TASK 1: EXCHANGE AND DISSEMINATION OF INFORMATION ON PHOTOVOLTAIC POWER SYSTEMS, "TRENDS REPORT, FOCUSING ON INDUSTRY AND INVESTMENT TO PV"	P. Hüsser	Nova Energie, Switzerland
6O-C10-02	Invited	TASK 2: PERFORMANCE, RELIABILITY AND ANALYSIS OF PHOTOVOLTAIC SYSTEMS	TBD (Task 2 expert)	
6O-C10-03	Invited	TASK 8: STUDY ON VERY LARGE SCALE PHOTOVOLTAIC POWER GENERATION	K. Komoto	Mizuho Information & Research Institute, Japan
6O-C10-04	Invited	TASK 9: PHOTOVOLTAIC SERVICES FOR DEVELOPING COUNTRIES	P. Ahm	PA Energy, Denmark
6O-C10-05	Invited	TASK 10: URBAN SCALE PHOTOVOLTAIC APPLICATIONS	C. Herig	Segue Energy Consulting, USA
6O-C10-06	Invited	TASK 11: PV HYBRID SYSTEMS WITHIN MINI-GRIDS	K. Mauch	KM Technical Services, Canada
6O-C10-07	Invited	TASK 12: PV ENVIRONMENT, SAFETY & HEALTH	TBD (Task 12 expert)	

High Efficiency, Mass Production Process, Thinner Cells Area 3 December 6th, Thursday 16:00-17:30 (Main Hall) Chs: K. Shirasawa Kyocera Corporation, Japan G. Willeke Fraunhofer-Institut für Solare Energiesysteme ISE, Germany				
6O-M6-01	Invited	1GWP INTEGRATED SOLAR FACTORIES (FROM POLY SI TO SOLAR MODULES)	P. Fath1,2, E. Rüland1, A. Mozer2 and C. Hahn2	1GP Solar GmbH, Germany, 2SolMic GmbH, Germany
6O-M6-02	Invited	TECHNOLOGY DEVELOPMENT OF HIGH-QUALITY n-TYPE MULTICRYSTALLINE SILICON FOR NEXT GENERATION ULTRA-THIN CRYSTALLINE Si SOLAR CELLS	T. Saitoh1, M. Dhamrin1, K. Kamisako1, K. Yamada2, N. Araki2, I. Yamaga2, H. Sugimoto3 and M. Tajima3	1Tokyo Univ. of Agriculture and Technology, Japan, 2Dai-Ichi Kiden Corp., Japan, 3JAXA, Japan
6O-M6-03		16.7% EFFICIENCY i-PERC SOLAR CELLS ON LARGE AREA 130 MICRON THICK MULTICRYSTALLINE SILICON SUBSTRATES	Y. Ma, G. Agostinelli, P. Choulat, H. Dekkers, X. Loozen and G. Beaucarne	IMEC vzw, Belgium
6O-M6-04		17 % EFFICIENT 50 UM THIN SOLAR CELLS	M. Reuter, W. Brendle, O. Tobail and J. H. Werner	University of Stuttgart, Germany
6O-M6-05		A 20% EFFICIENT SLIVER® SOLAR CELL	A. Blakers, V. Everett, K. Weber and E. Franklin	Australian National University, Australia
6O-M6-06		CONDUCTIVE SILVER COLLOIDS FOR LIGHT TRAPPING IN CRYSTALLINE SILICON SOLAR CELLS WITH REAR LOCAL CONTACTS	A. Das, V. Meemongkolkiat, A. Ristow and A. Rohatgi	Georgia Institute of Technology, USA

Large-area Modules and Processing Area 5 December 6th, Thursday 16:00-17:50 (Room A) Chs: J. van Duren Nanosolar, USA K. Kushiya Showa Shell Sekiyu K.K., Japan				
6O-A11-01	Special Invited	TBD	L. Kazumerski	NREL, USA
6O-A11-02	Invited	MASS-PRODUCTION TECHNOLOGY FOR HIGH-EFFICIENCY CIGS SOLAR CELLS	K. Matsunaga1, T. Komaru1, Y. Nakayama1, T. Kume2 and Y. Suzuki2	1Honda Engineering Co., Ltd., Japan, 2Honda Soltec Co., Ltd., Japan
6O-A11-03		FABRICATION OF PENTANARY Cu(InGa)(SeS)2 ABSORBERS BY SELENIZATION AND SULFURIZATION	Y. Goushi, H. Hakuma, K. Tabuchi, S. Kijima and K. Kushiya	Showa Shell Sekiyu K.K., Japan
6O-A11-04		HIGHLY EFFICIENT CUIN1-XGAXSE2-YSY/CDS THIN-FILM SOLAR CELLS BY USING DIETHYLSELENIDE AS SELENIUM PRECURSOR	A. A. Kadam and N. G. Dhere	University of Central Florida, USA
6O-A11-05		COMMERCIALIZATION OF 'INK BASED' CIGS SOLAR CELLS/MODULES	V. K. Kapur, A. Bansal, B. Gergen and P. Le	International Solar Electric Technology Inc. (ISET), USA
6O-A11-06		NANOPARTICLE-BASED TECHNOLOGY FOR THE FORMATION OF CIS SOLAR CELLS	S. Yoon, T. Yoon, K. Lee, S. Yoon and J. Ha	LG Chem, Ltd./Research Park, Korea (South)

Space Area 2 December 6th, Thursday 16:00-17:40 (Room B) Chs: D. D. Krut Spectrolab-Boeing, USA M. Imaizumi JAXA, Japan				
6O-B11-01	Invited	EVOLUTION OF SPACE SOLAR CELL AND ARRAY TECHNOLOGY FOR THE NEXT DECADE	H. W. Brandhorst, Jr.	Auburn University, USA
6O-B11-02	Invited	RESEARCH AND DEVELOPMENTS ON SPCECRAFT PHOTOVOLTAIC POWER GENERATION SYSTEMS AT JAXA	K. Kibe, M. Imaizumi, H. Toyota and M. Tajima	Japan Aerospace Exploration Agency (JAXA), Japan
6O-B11-03		DEVELOPMENT OF SPACE SOLAR SHEET	T. Kodama1, H. Yamaguchi1, N. Takahashi1, T. Agui1, H. Washio1, K. Nakamura1, T. Hisamatsu1, T. Takamoto1, K. Shimazaki2, M. Imaizumi2 and K. Kibe2	1SHARP Corporation, Japan, 2Japan Aerospace Exploration Agency, Japan
6O-B11-04		DEGRADATION MODELING OF InGaP/GaAs/Ge TRIPLE JUNCTION SOLAR CELLS IRRADIATED WITH VARIOUS ENERGY PROTONS	S. Sato1, H. Miyamoto1, 2, M. Imaizumi3, K. Shimazaki3, C. Morioka3, K. Kawano2 and T. Ohshima1	1JAEA, Japan, 2UEC, Japan, 3JAXA, Japan
6O-B11-05		STRUCTURAL STUDY ON ALINGAP SINGLE-JUNCTION SOLAR CELL FOR PERFORMANCE IMPROVEMENT OF TRIPLE-JUNCTION SOLAR CELLS	C. Morioka1, M. Imaizumi1, H. Sugimoto1, S. Sato2, T. Ohshima2 and M. Tajima1	1Japan Aerospace Exploration Agency (JAXA), Japan, 2Japan Atomic Energy Agency (JAEA), Japan
6O-B11-06		ANALYSIS OF SOLAR CELL DEGRADATION MECHANISM DUE TO ESD IN SPACE	T. Okumura1, K. Toyoda1, M. Imaizumi2 and M. Cho1	1Kyushu Institute of Technology, Japan, 2Japan Aerospace Exploration Agency, Japan

PVPS@PVSEC-17 Area 8 December 6th, Thursday 15:45-18:00 (Room C) Chair: G. Watt Australia PVPS Consortium, Australia Co-Chair: I. Kaizuka RTS Corporation, Japan				
6O-C11-01	Invited	PV STATUS IN AUSTRALIA	G. Watt	Australia PVPS Consortium, Australia
6O-C11-02	Invited	PV STATUS IN MALAYSIA	C. W. Nee	Pusat Tenaga Malaysia, Malaysia
6O-C11-03	Invited	PV STATUS IN KOREA	K. H. Yoon	Korea Institute of Energy Research, Korea
6O-C11-04	Invited	PV STATUS IN CHINA	J. Li	NDRC, CREIA, China
6O-C11-05	Invited	PV STATUS IN JAPAN	H. Matsukawa	RTS Corporation, Japan
6O-C11-06	Invited	PV STATUS IN INDIA	**B. A. Kumar**	**Indian Association for the cultivation of Science, India**
6O-C11-07	Invited	PV STATUS IN MEXICO	Y. Matsumoto	Centro de Investigatory De Estudios Avanzados Del, Mexico
6O-C11-08	Invited	PV STATUS IN CANADA	TBD	
6O-C11-09	Invited	PV STATUS IN USA	TBD	

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Plenary 7
Area 7 December 7th, Friday 8:30-9:30 (Main Hall)
Chs: S. Wakao Waseda University, Japan
R. Bründlinger Arsenal Research, Austria

PL7-1		FUTURE DIRECTION OF PVSYSTEM TECHNOLOGIES AROUND 2030 AND BEYOND	K. Kurokawa	Tokyo University of Agriculture and Technology – TUAT, Japan
PL7-2		PV HYBRIDS IN MINI-GRIDS - NEW IEA PVPS TASK 11	K. Mauch	KM Technical Services, Canada
PL7-3		LARGE SCALE PV DEMONSTRATIVE PROJECTS PROMOTED BY NEDO	S. Morozumi, Y. Arashiro and N. Inoue	New Energy and Industrial Technology Development Organization, Japan

Plenary 8
Area 8 December 7th, Friday 9:30-10:30 (Main Hall)
Chs: O. Ikki RTS Corporation, Japan
(TBD)

PL8-1		OVERVIEW OF NEDO'S PHOTOVOLTAIC R&D PROJECTS	H. Fukuda	NEDO, Japan
PL8-2		AN OVERVIEW OF THE U.S. DEPARTMENT OF ENERGY SOLAR PROGRAM: STRATEGY, R&D PIPELINE, AND NEXT STEPS	M. K. Mapes	U.S. Department of Energy Solar Energy Technologies Program, USA
PL8-3		THE GERMAN NATIONAL R&D PROGRAMMES	C. F. Hünnekes	Forschungszentrum Jülich GmbH, Germany

Next Generation Inorganic Solar Cell
Area 1 December 7th, Friday 11:00-12:30 (Room A)
Chs: M. Konagai Tokyo Institute of Technology, Japan
S. Panyakeow Chulalongkorn University, Thailand

7O-A12-01		IMPROVED CONVERSION EFFICIENCY OF SOLAR CELL USING RARE EARTH ION	K. Kawano, B. C.Hong, S. Kohketsu, Y. Nakamura and K. Sakamoto	The University of Electro-Communications, Japan
7O-A12-02		QUANTUM CONFINEMENT OF SIZE-CONTROLLED SILICON QUANTUM DOTS IN Si DOTS/AMORPHOUS SiC SUPERLATTICE	Y. Kurokawa, S. Tomita, S. Miyajima, A. Yamada and M. Konagai	Tokyo Institute of Technology, Japan
7O-A12-03		PLASMONIC ENHANCEMENT OF SILICON SOLAR CELLS	T. Temple and D. Bagnall	University of Southampton, UK
7O-A12-04		A MOLECULAR APPROACH TO THE INTERMEDIATE BAND SOLAR CELL	N. J. Ekins-Daukes and T. W. Schmidt	University of Sydney, Australia
7O-A12-05		REDUCTION OF ESCAPE CONE LOSSES IN LUMINESCENT CONCENTRATORS WITH CHOLESTERIC MIRRORS	A. R. Burgers1, L. H. Slooff1 and M.G. Debije2	1ECN Solar Energy, The Netherlands, 2Technical University of Eindhoven, The Netherlands
7O-A12-06		BASIC PROPERTIES OF SEMICONDUCTOR NANOWIRES WITH BUILT IN P-N JUNCTIONS AND THEIR POTENTIAL AS NANO-PHOTOVOLTAIC DEVICES.	M. Zervos	University of Cyprus, Cyprus

Spherical Solar Cells, Cell Fabrication
Area 3 December 7th, Friday 11:00-12:30 (Room B)
Chs: H. Takakura Ritsumeikan University, Japan
M. Dhamrin Tokyo University of Agriculture and Technology, Japan

7O-B12-01		APPROACHES FOR IMPROVING THE PERFORMANCES OF SPHERICAL SILICON SOLAR CELL	Z. Liu1, T. Nagai1, A. Masuda1, T. Hibino2, M. Murozono2 and M. Kondo1	1National Institute of Advanced Industrial Science and Technology (AIST), Japan, 2Clean Venture 21 Co., Japan
7O-B12-02		3-D GEOMETRY OF SPHELAR® CELLS	K. Taira, S. Ohtani, I. Inagawa, E. Omura and J. Nakata	Kyosemi Corporation, Japan
7O-B12-03		PULSED LASER-DOPED SELECTIVE EMITTER FOR SILICON SOLAR CELLS	C. Carlsson, J. R. Köhler and J. H. Werner	University of Stuttgart, Germany
7O-B12-04		PROCESSING OF HOT MELT INKS FOR HIGH EFFICIENCY SOLAR CELLS	S. Akasaka1, H. Kuno1, H. Okamoto1, A. Chang2, J. Chang2, H. Kerp3 and H. Miranda4	1Ferro Japan, KK, Japan, 2Ferro Performance Materials Co, Ltd., China (PRC), 3Ferro Electronic Materials System, The Netherlands, 4Ferro Electronic Materials System, USA
7O-B12-05		FABRICATION OF SILICON SOLAR CELLS WITH BACK SURFACE FIELD BY LASER DOPING TECHNIQUE	K. Horiuchi, Y. Takahashi, A. Ogane, A. Kitiyanan, Y. Uraoka and T. Fuyuki	Nara Institute of Science and Technology (NAIST), Japan
7O-B12-06		A METHOD OF MANUFACTURING MULTI-LAYERED ANTI-REFLECTIVE COATINGS FOR SILICON SOLAR CELLS	H. Park, D. Lee, J. Kim, J. You and J. Jeong	LG Chem, Ltd./ Research Park, Korea (South)

PV Programs, Policies and Incentives
Area 8 December 7th, Friday 11:00-12:30 (Room C)
Chs: K. Matsubara NEDO, Japan
D. Kim Korea University, Korea (South)

7O-C12-01	Invited	KOREAN NATIONAL R&D PROGRAMS, POLICY AND INCENTIVES ON PV	J. Song1, H. Lim2 and D. Kim2	1Korea Institute of Energy Research, Korea (South), 2Korea University, Korea (South)
7O-C12-02	Invited	SOLAR PHOTOVOLTAICS IN INDIA: STATUS AND PROSPECTS	A. K. Barua	Indian Association for the Cultivation of Science, India
7O-C12-03	Invited	TBD	J. Li	China Renewable Energy Industries Association, China
7O-C12-04	Invited	FRENCH PHOTOVOLTAIC PROGRAMME – FROM R&D TO MARKET DEPLOYMENT	A. Claverie	Agency for Environment and Energy Management, France
7O-C12-05	Invited	PROMOTING TARIFFS IN ITALY	A. De Lillo and S. Castello	ENEA, Italy
7O-C12-06	Invited	1st REPORT BY THE PHOTOVOLTAIC WORKING GROUP OF THE INTERNATIONAL SCIENCE PANEL ON RENEWABLE ENERGIES (ISPRE)	M. Yamaguchi1, J. Luther2, T. Schlegl2 and A. Blakers3	1Toyota Technological Institute, Japan, 2Fraunhofer Institute for Solar Energy Systems, Germany, 3The Australian National University, Australia

Closing Session
December 7th, Friday 14:00-15:30 (Main Hall)

CL-I	**Conference Highlights & Awards**		
	Chs: H. Okamoto Osaka University, Japan		
	M. Kondo AIST, Japan		
	S. Wakao Waseda University, Japan		
	Highlights	H. Okamoto	Osaka University, Japan
	Paper Award	M. Kondo	AIST, Japan
	Poster Award	A. Yamamoto	Fukui University, Japan
	Young Reseacher Award	S. Wakao	Waseda University, Japan
CL-II	**Conference Summary & Announcement of PV Conferences**		
	Chs: T. Fuyuki Nara AIST, Japan		
	T. Nagatomo Shibaura University, Japan		
	Y. Ohshita Toyota TI, Japan		
	Conference Summary	Y. Ohshita	Toyota TI, Japan
	33rd IEEE PVSC		
	23rd EU-PVSEC		
	PVSEC-18		
	Closing Remarks	M. Yamaguchi	Toyota TI, Japan
	Farewell	T. Fuyuki	Nara AIST, Japan

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