



PVSEC-1 (1984) / Kobe, Japan

| | |
|--|--|
| | International PVSEC-1 Committees |
| | Acknowledgement |
| | Message Yoshihiro Hamakawa |
| | Foreword Kiyoshi Takahashi |

[▲ Back to TOP](#)

■ Opening Session

| | |
|--------|---|
| A-Oa-1 | Recent Technical Accomplishments of The U.S. Federal Photovoltaic Program and Future Plans Morton B. Prince D.O.E., Washington, DC, U.S.A. |
| A-Oa-2 | R&D Programs on Photovoltaics in the EC R. Van Overstraeten Katholieke Univ., Leuven, Belgium |
| A-Oa-3 | Japanese Sunshine Project: Solar Photovoltaic Program T. Mukai Sunshine Project Promotion Headquarters, Tokyo |
| A-Ip-1 | The Status of (Crystalline) >Solar-Grade< silicon E. Sirtl Heliotronic GmbH, Burghausen, F.R.G. |
| A-Ip-2 | Status of the Liquid-Encapsulated "Polyx" Silicon Ingots Elaboration Method J. Fally, D. Guignot Labs. de Marcoussis, Cen. de Recherches de la C.G.E. Marcoussis, France |
| A-Ip-3 | Optimization of HEM Silicon in Initial Production C. P. Khattak, F.Schmid. W. Schmidt*, K. D. Rasch* Orystal. Systems, Inc., Salem, MA, U.S.A. *Telefunken Electronic GmbH. Heilbronn, F.R.G. |
| A-Ip-4 | On the Growth of Polycrystalline Si Crystal by Gas Assisted Solidification H.L.Hwang,C.Y.Sun,C.H.Chu,L.R.Hwang National Tsing Hua Univ., Hsin-chu, Taiwan, China |
| A-Ip-5 | Polycrystalline Large Area Silicon Sheets B. C. Grabmaier, J. Kotschy, A. Lerchenberger Siemens AG. Res.. Labs., München, F.R.G. |
| A-Ip-6 | Recent Developments in Polycrystalline Silicon Solar Cell K. Kimura Kyocera Corp., Kyoto |
| A-Ip-7 | Silicon Ribbons for Low-Cost Photovoltaics - Current Status and Future Potential K. V. Ravi Mobil Solar Energy Corp., Waltham, MA, U.S.A. |

| | |
|---------|--|
| A-Ip-8 | Growth of Polycrystalline Silicon Ribbons by the RAD Process C. Belouet, M. Mautref, C. Fages, C. Beaudereau Labs. de Marcoussis, Cen. de Recherches de la C.G.E., Marcoussis, France |
| A-Ip-9 | On the Physical Significance of Artificial Factor Used in Mobility and Resistivity Expressions of Polycrystalline Silicon S.N. Singh, P.K. Singh, R. Kishore National Physical Lab., New Delhi, India |
| A-Ip-10 | Characterization and Passivation of Grain Boundaries in Semicrystalline Solar Cells L. Sardi, D. Raghianti, M. Capizzi*, C. Coluzza* D. della Sala*, A. Frova*, M. Prudenziati**, P. Davoli** Ansaldo S.p.A., Genova, Italy *Univ. Roma, Roma, Italy **Univ. Modena, Modena, Italy |
| A-Ip-11 | Epitaxially Grown p/n Junctions on S-Web Substrates for Low Cost Si-Solar Cells J. G. Grabmaier, G. Geiger*, R. Falckenberg Siemens AG. Res. Lab., *Components Group, Mun-chen, F.R.G. |
| A-Ip-12 | Si Solar Cells Fabricated by Incoherent Light-Induced Diffusion of Phosphorus from a Spin-on Source M. Ando, A. Usami, K. Yamamoto, M. Tsunekane, Y. Inoue* Nagoya Inst. of Tech., Nagoya *Aichi Inst. of Tech., Toyota |

[▲ Back to TOP](#)

■ National Project-I

| | |
|--------|--|
| B-Ip-1 | The Role of Research and Development in the Worldwide Deployment of Photovoltaics J. Stone, D. Ritchie, S. Deb. T. Surek Solar Energy Res. Inst. Golden, CO, U.S.A. |
| B-Ip-2 | Solar Cell Research and Development in Australia M. A. Green Univ. New South Wales, Kensington, New South Wales, Australia |
| B-Ip-3 | Solar Cell Development Projects in Brazil C. A. Morato de Anderade Univ. San Paulo, San Paulo, Brazil |
| B-Ip-4 | Research on Photovoltaic Systems in Mexico L. E. Sansores Univ. Nacional, Mexico |
| B-Ip-5 | Strategy, Objectives and Preliminary Achievements of the French Photovoltaic Programme 1982-86 B. Chabot, A. Claverie Agence Francaise pour la Maitrise de l'Energie, Sophia Antipolis, Valbonne, France |
| B-Ip-6 | National Project of Solar Cells in Saudi Arabia A. Kettani Islamic Foundation for Sci. Tech. & Development, Jeddah, Saudi Arabia |
| B-Ip-7 | Solar Cells Research and Development in China (PRC) Pei-nuo Yu Tiajin Inst. Power Sources, China |
| B-Ip-8 | National (or Research) Project of Solar Cells in India 99 S. C. Jain Solid-State Phys. Lab., Delhi, India |
| B-Ip-9 | Special Features of Performance of Solar Cells in Finland E. Lingnell, E. Siponmaa, J. Tallqvist, M. Leppihalme Semiconductor Lab, Technical Res. Cen. of Finland, Espoo, Finland |

[▲ Back to TOP](#)

■ Amorphous Silicon Basic Research-I

| | |
|---------|--|
| B-IIa-1 | |
|---------|--|

| | |
|---------|---|
| | High Rate Deposition of a-Si:H Films from Disilane(Si₂H₆) |
| | N. Fukuda, S. Ogawa, K. Abe, Y. Ohashi, S. Kobayashi Cen. Res. Inst., Mitsui Toatsu Chemicals Inc. Yokohama, Kanagawa |
| B-IIa-2 | Stable Reference Cells for Thin Film Silicon:Hydrogen Alloy Solar Cells: Fabrication, Calibration, and Use |
| | G. B. Turner ARCO Solar, Inc., Chatsworth, CA, U.S.A. |
| B-IIa-3 | An Approach to p-n Amorphous-Polycrystalline Silicon Heterojunction Solar Cell |
| | F. A. Rubinelli, S. Albornoz, R. H. Buitrago INTEC (CONICET-UNL) Guemes, Santa Fe, Argentina |
| B-IIa-4 | Characterization of a-Si Solar Cells Fabricated Using High-Rate Deposition with Si₂H₆ |
| | H. Itoh, S. Matsubara, S. Muramatsu, N. Nakamura, T. Ikegaki, T. Shimada Cen. Res. Lab., Hitachi Ltd., Kokubunji, Tokyo |
| B-IIa-5 | P-I-N Thin Film Silicon Hydrogen Alloy Solar Cells: Numerical Model Predictions |
| | R. J. Schwartz, J. L. Gray, G. B. Turner* Purdue Univ., West Lafayette, IN, U.S.A. *ARCO Solar, Inc., Chatsworth, CA, U.S.A. |
| B-IIa-6 | Improvement of a-Si:H Solar Cells by Field-Induced Doping |
| | W. Krühler, H. Pfeleiderer, R. Plättner, W. Stetter Res. Lab. of Siemens AG, München, F.R.G. |

[▲ Back to TOP](#)

■ High Efficiency Silicon Solar Cells

| | |
|---------|--|
| C-IIa-1 | Progress in Fundamental Research on Photovoltaics |
| | H. Matsunami Kyoto Univ., Kyoto |
| C-IIa-2 | The Behavior of Short-Circuit Current with Irradiance Level: A Review |
| | S. C. Martin, C. E. Backus Arizona State Univ. Tempe, AZ, U.S.A. |
| C-IIa-3 | Towards 20% Efficiency in Si Solar Cells |
| | M. Wolf Univ. of Pennsylvania, Philadelphia, PA, U.S.A. |
| C-IIa-4 | Reliability of High Efficiency Silicon MIS-Inversion Layer Solar Cells |
| | R. Hezel Inst. für Werkstoffwissenschaften, Univ. Erlangen-Nürnberg, Erlangen, F.R.G. |

[▲ Back to TOP](#)

■ Theory and Modeling

| | |
|-------|--|
| P-I-2 | A Comparison of Extracted Solar Cell Parameters from Single and Double Diode Lumped Circuit Models |
| | D. S. H. Chan, J. C. H. Phang, J. R. Phillips, M. S. Loong National Univ. of Singapore, Kent Ridge, Singapore |

[▲ Back to TOP](#)

■ Amorphous Silicon Solar Cells

| | |
|--------|--|
| P-I-8 | Effect of Drift Length to Spectral Response of Amorphous Silicon Solar Cells |
| | M. Warashina, A. Ushirokawa Inst. of Space and Astronautical Sci., Tokyo |
| P-I-9 | Computer Simulation of a-Si Solar Cell Characteristics Using Calculus of Finite Differences and Self-Consistent Method |
| | T. Ikegaki*, H. Itoh, S. Muramatsu, S. Matsubara, N. Nakamura, T. Shimada, J. Umeda*, M. Migitaka** Central Res. Lab., Hitachi Ltd., Kokubunji, Tokyo *Tsukuba Res. Lab., Hitachi Maxell, Ltd., Mitsuikaido, Ibaragi **Toyota Tech. Inst., Nagoya |
| P-I-10 | Structure of Tin Oxide Films and a-Si: H Solar Cell Characteristics |

| | |
|--------|---|
| | H. Iida, T. Mishuku, A. Ito, Y. Hayashi* Taiyo Yuden Tech. Lab., Harunamachi, Gunma *Electrotechnical Lab., Sakura-mura, Ibaraki |
| P-I-11 | Amorphous Si/Ribbon Crystalline Si Tandem Type Solar Cell H. Nozaki, T. Hatayama, H. Itoh, K. Ide*, M. Nakagawa* Toshiba Res. & Dev. Cent., Toshiba Corp., Kawasaki, Kanagawa *Toshiba Electron Device Engineering Lab., Toshiba Corp., Yokohama, Kanagawa |
| P-I-12 | Preparation and Performance of a Novel Structure Amorphous SiC/Crystalline Si Solar Cell M. M. Rahman, S. Furukawa Tokyo Inst. Tech., Yokohama, Kanagawa |
| P-I-13 | Selective Passivation of Material Defects by Anodic Oxidation for Fabrication of Large-Area Amorphous Silicon Solar Cells S. Arimoto, H. Ohno, H. Hasegawa Hokkaido Univ. Sapporo, Hokkaido |
| P-I-14 | Effects of Deposition Temperature on the a-Si Solar Cell Performance K. Tsuge, M. Kondo, K. Nishimura, N. Fukada, Y. Tawada, Y. Hamakawa* Cen. Res. Lab., Kanegafuchi Chemical Ind., Co. Ltd. Kobe, Hyogo *Osaka Univ., Toyonaka, Osaka |
| P-I-15 | Design Parameters of Large-Scale Horizontal Plasma Furnace K. Nishimura, T. Nakayama, K. Tsuge, Y. Tawada H. Hirata*, M. Izumina*, Y. Hamakawa** Central Res. Lab., Kanegafuchi Chemical Ind., Co. Ltd., Kobe, Hyogo *Electric and Electronic Materials Res. & Dev. Lab., Kanegafuchi Chemical Ind., Co. Ltd., Ohtsu, Shiga **Osaka Univ., Toyonaka, Osaka |
| P-I-16 | High Performance a-Si:H Solar Cells Prepared from SiH₄ at High Deposition Rates P. Sihanugrist, M. Konagai, K. Takahashi Tokyo Inst. Tech., Tokyo |
| P-I-17 | Design of Flexible a-Si:H Solar Cell to Increase Conversion Efficiency K. Suzuki, K. Nakatani, M. Yano, H. Okaniwa Cen. Res. Labs., Teijin Ltd., Hino, Tokyo |
| P-I-18 | Amorphous Silicon Solar Cell on Ceramic Substrate Y. Nitta, Y. Minamino, K. Fujisawa, H. Kubo, C. Iwasaki, T. Minato, K. Tomita, K. Ishibitsu Kyocera Corp., Yokkaichi, Shiga |
| P-I-19 | The Affects of Cross-Contamination: a Comparative Study of Different Solar-Cell Structures G. Muller, N. Knoffler Messerschmitt-Bolkow-Blohm GmbH. München, F.R.G. |
| P-I-20 | In-Depth Analysis of Boron at the p-i Interface of Amorphous Silicon by Secondary Ion Mass Spectrometry H. Waki, N. Fukuda, T. Mitsuishi, J. Saito, T. Uchijima* Central Res. Lab., Mitsui Toatsu Chemicals, Inc., Yokohama, Kanagawa *Univ. of Tsukuba, Sakura-mura, Ibaraki |
| P-I-21 | Effects of Boron-Phosphorus Counterdoping on the ITO/p-i-n/ Metal a-Si:H Solar Cell Performances H. Sakai, A. Asano, M. Kamiyama, Y. Uchida Fuji Electric Corporate Research and Development, Ltd., Yokosuka, Kanagawa |
| P-I-22 | Improvement of Low Bandgap a-SiGe pin Cells for Tandem Type Solar Cells Y. Higaki, M. Aiga, S. Terazono, Y. Yukimoto LSI R&D Lab., Mitsubishi Electric Corp. Itami, Hyogo |
| P-I-23 | The Light Induced Degradation of a-Si Films and Solar Cells S. Tsuda, N. Nakamura, K. Watanabe, M. Nishikuni, M. Ohnishi, S. Nakano, Y. Kishi*, H. Shibuya*, Y. Kuwano Res. Cen., SANYO Electric Co., Ltd., Hirakata, Osaka *Appl. Res. Cen. SANYO Electric Co., Ltd., Moriguchi, Osaka |
| P-I-24 | Light-Induced Change in pin and nip-based a-Si:H Solar Cells Y. Uchida, M. Kamiyama, Y. Ichikawa, T. Hama, H. Sakai Fuji Electric Corporate. Res. & Development, Ltd., Yokosuka, Kanagawa |
| P-I-25 | Reliability of a-Si:H Photovoltaic Module Composed of Glass-substrate Solar Cell |

| | |
|--------|---|
| | H. Sakai, S. Maruyama, N. Furusho, M. Kamiyama, Y. Uchida Fuji Electric Corp. Res. & Development, Ltd., Yokosuka, Kanagawa |
| P-I-26 | On the Difference in Stability between pin and nip Type a-Si:H Solar Cells M. Aiga, S. Terazono, Y. Higaki, Y. Yukimoto LSI R&D Lab., Mitsubishi Electric Corp., Itami, Hyogo |
| P-I-27 | Thermal Degradation of a-Si:H Solar Cells N. Fukada, J. Takada, M. Yamaguchi, K. Tsuge, Y. Tawada, Y. Hamakawa* Central Res. Lab., Kanegafuchi Chemical Ind. Co., Ltd., Kobe, Hyogo *Osaka Univ., Toyonaka, Osaka |
| P-I-29 | A Field Evaluation of Power Efficiency Degradation on Amorphous Modules K. Takigawa, Y. Takeda, H. Kobayashi Cen. Res. Inst. of Elec. Power Ind., Tokyo Alternative Material Solar Cells |
| P-I-30 | Computer Modeling Study of the Effects of In-homogeneous Doping and/or Composition in GaAs Solar Cell Devices H. C. Hamaker Varian Associates, Inc., Solid State Lab., Palo Alto, CA, U.S.A. |
| P-I-31 | Thin-Film Silicon and GaAs Solar Cells on Metal and Glass Substrates A. M. Barnett, M. G. Mauk, J. C. Zolper, R. B. Hall*, J. B. McNeely* Univ. of Delaware, Newark, DE, U.S.A. *Astrosystems, Inc., Newark, DE, U.S.A. |
| P-I-32 | Mg doped p⁺-n InP Solar Cell by LPE Y. Itoh, K. Ando, M. Yamaguchi, C. Uemura Ibaraki ECL, NTT, Tokai, Ibaraki |
| P-I-33 | Optical Characterization of Doped CdTe Films for Photovoltaic Devices J. G. Mendoza-Alvarez, F. Sanchez-Sinencio, M. Cardenas, O. Zelaya, B. S. H. Royce* Phys. Dept. CINVESTAV, Mexico, D.F., Mexico *Appl. Phys. & Materials Lab., Princeton Univ., Princeton, NJ, U.S.A. |
| P-I-34 | CSVt a Low Cost, High Mass Transport Efficiency Epitaxy Method for PV Research J. Mimila-Arroyo Centro de Investigacion y de Estudios Avanzados del IPN, Mexico |
| P-I-35 | Growth of CuInSe₂ and CuInTe₂ for Photovoltaic Cells A.V. Shahidi, I. Shih, C.H. Champness McGill Univ., Montreal, Canada |
| P-I-36 | n-CdS/p-WSe₂ Heterojunction: a Candidate for Solar Cell Applications? M. Ch. Lux-Steiner, R. Spah, M. Obergfell, E. Bucher, H.W. Schock*, H. Dimmler*, W.H. Bloss* Univ. Konstanz, F.R.G. *Univ. Stuttgart, F.R.G. |
| P-I-37 | Photovoltaic Properties of Copper Phthalocyanine Binder Layer Solar Cells M. Takeuchi, S. Ohtsu, H. Takeoka, S. Naganuma, H. Nagasaka Ibaraki Univ., Hitachi, Ibaraki |
| P-I-38 | Fabrication of n-CdS/p-InP Solar Cell with a Very Thin CdS Window Layer by Low-Pressure MOCVD S. Yamaga, A. Yoshikawa, H. Kasai Chiba Univ., Chiba National Project |

[▲ Back to TOP](#)

■ National Project

| | |
|-------|--|
| P-I-3 | Short Term Barriers to PV Industry Development Wm. J. Murray Strategies Unlimited, Mountain View, CA., U.S.A. |
| P-I-4 | Photoelectrochemical Cells with and without Storage Based on II-VI Semiconductor Materials W. Wallace Solar Energy Res. Inst. Golden, CO. U.S.A. |

| | |
|-------|--|
| P-I-5 | Status of the US Photovoltaic Concentrator Technology Project M. W. Edernburn Sandia National Lab., Albuquerque. NM. U.S.A. |
| P-I-6 | Development of Amorphous Silicon Solar Cells by NEDO T. Wakita, S. Ikeda, T. Horigome NEDO., Tokyo |
| P-I-7 | Photovoltaic Legislation in the United States B. S. Macaleer, D. L. Wilson, J. Eberle Meridian Corp., Falls Church, VA, U.S.A. |

[▲ Back to TOP](#)

■ Terrestrial System

| | |
|--------|---|
| P-I-39 | 100kWp Photovoltaic Power Generation System for Factory M. Murozono, Y. Kita, S. Kitamura, N. Ueno, K. Omura, M. Kubota, S. Yamauchi Matsushita Battery Ind. Co., Ltd., Moriguchi, Osaka |
| P-I-40 | Field Experience of 2 kWp Photovoltaic Power Generation Test Facility M. Murozono, Y. Kita, H. Takakura*, N. Suyama, M. Kubota, S. Yamauchi, Y. Hamakawa* Matsushita Battery Ind. Co., Ltd., Moriguchi, Osaka *Osaka Univ., Toyonaka, Osaka |
| P-I-41 | Field Experiments on the Solar House in Kumamoto with 1.6kWp Solar Photovoltaic System O. Ishihara, S. Adachi* Kumamoto Univ., Kumamoto *RKK Dev. Corp., Kumamoto |
| P-I-43 | Design Installation and Performance of a PV System for Distant Railway Signal Lighting Applications R. K. Jain, N. Vaidehi, E. S. Ramamurthy Bharat Heavy Electricals Ltd., Bangalore, India |
| P-I-44 | All-Day Efficiency of Photovoltaic System Y. Tsuchiya Hachinohe Tech. College, Hachinohe, Aomori |
| P-I-45 | Generating Characteristics of Fixed Type and Sun-tracking Type Photovoltaic Electric Power Generating Systems E. Uzihara, H. Kuwahara*, S. Tanaka** Chubu Elec. Power Co., Inc., Cen. Tech. Res. Lab., Nagoya *Mitsubishi Elec. Corp., Itami Works, Amagasaki, Hyogo **Sanken Elec. Co., Ltd., Niiza, Saitama |
| P-I-46 | The Application and Operation Record of the Photovoltaic Power System to the Circulation Pumps for Solar Collectors M. Saito, H. Noda, T. Abe Ohbayashi Corp., Tokyo. |
| P-I-47 | A Suggestion for Solar Array Installation Design Based on the Calculated Solar Radiation on an Inclined Surface Y. Kita, H. Takakura*, M. Murozono, M. Kubota, S. Yamauchi, Y. Hamakawa* Matsushita Battery Ind. Co., Ltd., Moriguchi, Osaka *Osaka Univ., Toyonaka, Osaka |
| P-I-48 | Measurements and Analyses on Photovoltaic Module Output at Various Operating Voltage in the Field H. Takakura, Y. Kita*, M. Murozono*, M. Kubota*, S. Yamauchi*, Y. Hamakawa Osaka Univ., Toyonaka, Osaka *Matsushita Battery Ind. Co., Ltd., Moriguchi, Osaka |
| P-I-49 | A New Family of Inverters for Solar Photovoltaic Residential Applications P. Savary, M. Nakaoka, T. Maruhashi Kobe Univ., Kobe, Hyogo |
| P-I-50 | New Solar Cell Power Supply System Using a Bidirectional PWM Inverter with Energy Storage Transformer H. Matsuo, F. Kurokawa Nagasaki Univ., Nagasaki |
| P-I-51 | Analysis of Costs for a 5 MW Photovoltaic Power Plant |

| | |
|--------|---|
| | G. J. Shushnar, R. F. Reinoehl, J. C. Arnett Arco Solar Ind., Chatsworth, CA, U.S.A. |
| P-I-52 | Rural Electrification Programme by Stand Alone PV Generators in Metropolitan France A. Claverie, P. Coroller Agence Francaise pour la Maitrise de l'Energie, Valbonne, France |
| P-I-53 | Reliability Research toward 30-Year-Life Photovoltaic Modules R. G. Ross Jr. Jet Propulsion Lab., Pasadena, CA, U.S.A. |

[▲ Back to TOP](#)

■ **Alternative Material Solar Cells**

| | |
|----------|--|
| A-IIp-1 | III-V Compounds for Single-Junction and Tandem Applications J.C.C. Fan Lincoln Lab., M. I. T. Lexington, MA, U.S.A. |
| A-IIp-2 | Towards a High-Efficiency Multijunction Solar Cell J. G. Werthen, G. F. Virshup, C. W. Ford, C. R. Lewis Varian Associates, Inc., Palo Alto, CA, U.S.A. |
| A-IIp-3 | GaAs/Si Tandem Solar Cell R. Y. Loo, G. S. Kamath, R. C. Knechtli, J. Gee*, D. King* Hughes Res. Labs., Malibu, CA, U.S.A. *Sandia National Labs., Albuquerque, New Mexico, U.S.A. |
| A-IIp-4 | MOCVD Growth of GaAs and AlGaAs for Solar Cell Application S. Sakai, T. Soga*, M. Takeyasu, M. Umeno Nagoya Inst. Tech., Nagoya *Nagoya Univ., Nagoya |
| A-IIp-5 | Large-Bandgap Polycrystalline Thin Film Solar Cells for Tandem Structures W. Arndt, J. Kimmerle, R. Menner, F. Pfisterer, H. W. Schock, W. H. Bloss Univ. Stuttgart, Inst. fuer Physikalische Elektronik, Stuttgart, F.R.G. |
| A-IIp-6 | Fabrication and Characteristics of GaAsP Photovoltaic Cells by Ion Implantation Technique S. Fujita, M. Kawanaka, A. Sasaki Kyoto Univ. Kyoto |
| A-IIp-7 | High Conversion Efficiency n⁺-p Junction InP Solar Cells A. Yamamoto, M. Yamaguchi, C. Uemura Ibaraki ECL, NTT, Tokai, Ibaraki |
| A-IIp-8 | Prospects for High Performance, Low Cost Heterojunction Solar Cells Based on CdS, CdTe and Ternary Semiconductors like CuInSe₂ J. J. Loferski Brown Univ., Providence, RI, U.S.A. |
| A-IIp-9 | Characterization of CdTe Thin Films by Wavelength Modulation Reflectance Spectroscopy and Their Applications to Photovoltaic Devices Studies H. L. Hwang, T. M. Hsu*, R. C. Jih*, Y. S. Tyan** National Tsing Hua Univ., Hsin-chu, China *National Central Univ., Chung-li, China **Eastman Kodak, Rochester, NY, U.S.A. |
| A-IIp-10 | Photovoltaic and Electrical Properties of Zn₃P₂/CdS Heterojunctions T. Suda, A. Kuroyanagi, S. Kurita* Inst. of Vocational Training, Sagamiara, Kanagawa *Keio Univ., Kohoku, Kanagawa |
| A-IIp-11 | n-ZnO/p-CdTe Photovoltaic Cell Prepared by CVD R. Kimata, M. Kasuga, T. Tsukumo, R. H. Bube*, R. S. Feigelson* Yamanashi Univ., Kofu, Yamanashi *Stanford Univ., Stanford, U.S.A. |
| A-IIp-12 | A Model for the n-(Cd, Zn)S/p-CuInSe₂ Polycrystalline Thin Film Solar Cell C. Goradia, M. Ghalla-Goradia, A. M. Hermann* Cleveland State Univ., Cleveland, OH, U.S.A. *SERI, Golden, CO, U.S.A. |

| | |
|----------|--|
| A-IIp-13 | Large Area Screen Printed CdS/CdTe Solar Cells H. Matsumoto, A. Nakano, Y. Komatsu, H. Uda, s. Ikegami Wireless Res. Lab., Matsushita, Kadoma, Osaka |
|----------|--|

[▲ Back to TOP](#)

■ **Amorphous Silicon Basic Research-II**

| | |
|---------|---|
| B-IIp-1 | Light Induced Effects on Transport and Gap State Density Distribution in Amorphous Silicon Solar Cell Materials C. Lee Korea Advanced Inst. of Sci. & Tech., Seoul, Korea |
|---------|---|

| | |
|---------|---|
| B-IIp-2 | Electron Radiation Induced Stability Effects in Thin Film Silicon: Hydrogen Solar D. P. Tanner, K. W. Mitchell ARCO Solar, Inc., Chatsworth, CA, U.S.A. |
|---------|---|

| | |
|---------|--|
| B-IIp-3 | Recovery of Light Induced Changes in Hydrogenated Amorphous Silicon by IR Irradiation J. Jang, C. Lee* Kyung Hee Univ., Seoul, Korea *Korea Advanced Inst. of Sci. & Tech., Seoul, Korea |
|---------|--|

| | |
|---------|---|
| B-IIp-4 | Gap-State Analysis of Staebler-Wronski Effect in PDoped a-Si:H H. Okushi, M. Itoh, T. Okuno, S. Yamasaki, K. Tanaka Electrotechnical Lab., Sakura-mura, Ibaraki |
|---------|---|

| | |
|---------|--|
| B-IIp-5 | Below-Gap Absorption and Mobility-Lifetime Product in Amorphous Silicon H. Kida, H. Yamagishi, T. Kamada, H. Okamoto, Y. Hamakawa Osaka Univ., Toyonaka, Osaka |
|---------|--|

| | |
|---------|---|
| B-IIp-6 | The Effect of Interface between p and i Layer in p-i-n a-Si:H Solar Cell C. Guanghua, Z. Fangqing, X. Xixiang Lanzhou Univ., Lanzhou, China |
|---------|---|

| | |
|---------|---|
| B-IIp-7 | Novel Properties of a-Si:H/a-Si_{1-x}N_x:H Superlattices S. Miyazaki, N. Murayama, M. Hirose, M. Yamanishi Hiroshima Univ., Higashihiroshima, Hiroshima |
|---------|---|

| | |
|---------|--|
| B-IIp-8 | Photoconductive a-SiGe:F, H and Transparent IrO_x for High-Efficiency Amorphous Solar Cells S. Oda, M. Yamaguchi, J. Hanna, S. Ishihara, R. Fujiwara, S. Kawate, I. Shimizu Tokyo Inst. Tech., Nagatsuda, Yokohama |
|---------|--|

| | |
|---------|--|
| B-IIp-9 | Characterization of Thin Film Si:H:N Alloys B. Wong; D. L. Morel, V. G. Grosvenor ARCO Solar, Inc., Chatsworth, CA, U.S.A. |
|---------|--|

| | |
|----------|---|
| B-IIp-10 | Characterization of Undoped Microcrystalline Silicon for Solar Cell Application D. Kruangam, K. Hanaki, S. Nonomura, H. Okamoto, Y. Hamakawa Osaka Univ., Toyonaka, Osaka |
|----------|---|

| | |
|----------|--|
| B-IIp-11 | Plasma Potential Gradient in DC Positive Column and Its Effect on the Deposition and Photovoltaic Performance of a-Si:H Films J. J. Hanak RCA Labs., Princeton, NJ, U.S.A. |
|----------|--|

| | |
|----------|--|
| B-IIp-12 | High-Rate Deposition of a-Si:H Films from Monosilane by Hot-Wall Type Symmetric-Plasma CVD Reactor T. Shimada, N. Nakamura, S. Matsubara, H. Itoh, S. Muramatsu, M. Migitaka Hitachi, Ltd., Kokubunji, Tokyo |
|----------|--|

| | |
|----------|--|
| B-IIp-14 | Valency Control in Photochemically-Deposited a-Si:H from Si₂H₆ T. Kazahaya, M. Hirose, Y. Mishima*, Y. Ashida** Hiroshima Univ., Higashihiroshima, Hiroshima *Fujitsu Labs. Ltd., Atsugi, Kanagawa **Mitsutoatsu Chemicals Inc., Tokyo |
|----------|--|

[▲ Back to TOP](#)

■ **Space Solar Cell Technology**

| | |
|---------|---|
| C-IIp-1 | A European View of the Future of Space Photovoltaics K. Bogus European Space Agency, Noordwijk, Netherlands |
| C-IIp-2 | Improved Antireflective Coating for Ultrathin Silicon Solar Cells Y. Tonomura, Y. Hagihara, T. Matsutani, T. Saga, T. Hirano, A. Suzuki, S. Matsuda* Sharp Co., Shinjo-Cho, Nara *NASDA, Sakura-mura, Ibaraki |
| C-IIp-3 | Development of Ultrathin Silicon Solar Cell Assembly Technology Y. Matsui, K. Kamimura, K. Sakurai, T. Hirano, T. Matsutani, A. Suzuki Sharp Co., Shinjo-cho, Nara |
| C-IIp-4 | Large Area, Thin GaAs Solar Cells for Space Application L. Bertotti, C. Flores, L. Stampa* CISE S.p.A. Via Reggio Emilia, Milano, Italy *ENEA-Casaccia, Roma, Italy |
| C-IIp-5 | Radiation Damage in GaAs and Si Solar Cells due to Electrons K. Mitsui, M. Kato, S. Yoshida, Y. Yukimoto, S. Matsuda* Mitsubishi, Itami, Hyogo *NASDA, Sakura-mura, Ibaraki |
| C-IIp-6 | Electron Radiation Damage in Liquid-Phase Epitaxy Gallium Aluminum Arsenide Solar Cells R. L. Statler, D. H. Walker Naval Res. Lab., Washington, DC, U.S.A. |
| C-IIp-7 | Radiation Defect Properties in Solar Cell Material InP K. Ando, M. Yamaguchi, Y. Ito, C. Uemura Ibaraki ECL, NTT, Tokai-mura, Ibaraki |

[▲ Back to TOP](#)

■ National Project-II

| | |
|----------|--|
| C-IIp-8 | Solar Cells Application in Egypt's Rural Areas S. Arafa American Univ. in Cairo, Egypt |
| C-IIp-9 | Experience of Photovoltaic Systems in Greece V. Makios Lab. of Electromagnetics, Univ. of Patras, Patras, Greece |
| C-IIp-10 | Technical and Economical Evaluation of the Brazilian Potential Photovoltaic Market I. Chambouleyron, R. Dagnino, A. Muller*, H. Mitlag, C. Maciel, G. Biasotto, O. Frick* UNICAMP, Campinas, San Paulo, Brazil *School of Business and Economics, USP, San Paulo, Brazil |
| C-IIp-11 | Development of Photovoltaic Power Systems in NEDO S. Ikeda, H. Yokoyama, K. Akiyama, M. Mutsunobu, T. Wakita, T. Horigome NEDO, Higashi-Ikebukuro, Tokyo |
| C-IIp-12 | Flat-Plate Solar Array Project (FSA) Progress and Plans W. T. Callaghan Jet Propulsion Lab., Pasadena, CA, U.S.A. |
| C-IIp-13 | U.S. Amorphous Silicon Research Project E. Sabisky Solar Energy Res. Inst., Golden, Colorado, U.S.A. |

[▲ Back to TOP](#)

■ Silicon Solar Cell Technology-II

| | |
|----------|--|
| A-IIIa-1 | Recent Advance in Si Solar Cell Y. Hayashi ETL, Sakura-mura, Ibaraki |
| A-IIIa-2 | Technological Advantages of Crystalline Silicon Thin Film Solar Cells with Conventional Efficiencies |

| | |
|----------|--|
| | A. Goetzberger, J. Knobloch, B. Voss Fraunhofer-Institut für Solare Energiesysteme, Freiburg, F.R.G. |
| A-IIIa-3 | One Step Firing Method for Solar Cell Fabrication M. Okunaka, M. Nakatani, T. Saitoh*, K. Matsukuma**, N. Kamita**, K. Morita** Prod. Eng. Res. Lab., Hitachi, Ltd., Yokohama, Kanagawa *Cen. Res. Lab., Hitachi, Ltd., Kokubunji, Tokyo **Hitachi Works, Hitachi, Ibaraki |
| A-IIIa-4 | Dark and Photovoltaic I-V Characteristics of High Dose Ion Implanted and Laser Annealed Silicon Solar Cells A. Slaoui, E. Fogarassy, P. Siffert Centre de Recherches Nucleaires Lab. Phase, Strasbourg France |
| A-IIIa-5 | Development of Ion Implantation Techniques for Silicon Solar Cell Manufacture S. J. Hogan, M. B. Spitzer Spire Corp., Bedford, MA, U.S.A. |
| A-IIIa-6 | Current Processes for Crystalline Silicon in Photovoltaics J. G. Grabmaier Res. Labs. of Siemens AG, München, F.R.G. |
| A-IIIa-7 | Radiation-Annealed, Ion-Implanted Silicon Solar Cells for High Volume Production T. Saitoh, N. Natsuaki, H. Itoh, M. Okunaka*, M. Nakatani*, Y. Kida**, K. Morita** Cen. Res. Lab., Hitachi, Ltd., Kokubunji, Tokyo *Prod. Eng. Res. Lab., Hitachi, Ltd., Yokohama, Kanagawa **Hitachi Works, Hitachi Ltd., Hitachi, Ibaraki |
| A-IIIa-8 | Degradation of Silicon Solar Cells due to the Formation of Schottky Barrier Contacts J. W. Lathrop, K. Misiakos Clemson Univ., Clemson, SC, U.S.A. |
| A-IIIa-9 | Assessment of Degradation in Crystalline Silicon Solar Cells through the Use of an Accelerated Test Program J. W. Lathrop, E. L. Royal* Clemson Univ., Clemson, SC, U.S.A. *Jet Propulsion Lab., Pasadena, CA, U.S.A. |

[▲ Back to TOP](#)

■ Amorphous Silicon Solar Cells-I

| | |
|----------|--|
| B-IIIa-1 | Recent Progress of Device Performance and Stability in a-Si Solar Cells C. R. Wronski Exxon Res. & Eng. Co., Annandale, NJ, U.S.A. |
| B-IIIa-2 | Amorphous Silicon Solar Cells Prepared by Photochemical Vapor Deposition T. Tanaka, W. Y. Kim, M. Konagai, K. Takahashi Tokyo Inst. Tech, Tokyo |
| B-IIIa-3 | Design and Performance of Thin Film Silicon: Hydrogen Tandem Modules D. L. Morel, R. D. Wieting, K. W. Mitchell ARCO Solar, Inc., Chatsworth, CA, U.S.A. |
| B-IIIa-4 | Recent Developments in Amorphous Silicon Solar Cells Y. Kuwano Sanyo, Hirakata, Osaka |
| B-IIIa-5 | Roll-to-Roll Mass Production Process for a-Si Solar Cell Fabrication S. R. Ovshinsky Energy Conversion Devices, Inc., Tray, MI, U.S.A. |
| B-IIIa-6 | Laser Patterned Integrated Type a-Si Solar Cell Module S. Nakano, H. Kawada, T. Matsuoka, S. Kiyama, S. Sakai, K. Murata*, H. Shibuya*, Y. Kishi*, I. Nagaoka, Y. Kuwano Sanyo, Hirakata, Osaka *Sanyo, Moriguchi, Osaka |
| B-IIIa-7 | Tandem Type Amorphous Solar Cell G. Nakamura, K. Sato, T. Ishihara, M. Usui, H. Sasaki, K. Okaniwa, Y. Yukimoto LSI Res. & Development Lab., Mitsubishi, Itami, Hyogo |

| | |
|----------|---|
| B-IIIa-8 | Fabrication Techniques of Large Area a-Si:H Solar Cells H. Sakai, K. Maruyama, T. Yoshida, Y. Ichikawa, T. Hama, M. Ueno, M. Kamiyama, Y. Uchida Fuji Electric Corporate Res. & Dev., Ltd., Yokosuka, Kanagawa Terrestrial System |
| C-IIIa-1 | Photovoltaic Power for Electric Utility Applications: Progress and Prospects E. A. DeMeo Elec. Power Res. Inst., Palo Alto, CA, U.S.A. |
| C-IIIa-2 | Large Scale Photovoltaic Energy Systems E. Berman, R. F. Reinoehl, J. C. Arnett, J. H. Caldwell ARCO Solar Inc., Chatsworth, CA, U.S.A. |
| C-IIIa-4 | New Maximum Power Tracker of the Solar Cell Power Supply System H. Matsuo, F. Kurokawa, M. Murozono* Nagasaki Univ., Nagasaki *Matsushita Battery Ind. Corp., Moriguchi, Osaka |
| C-IIIa-6 | Photovoltaic Systems Technology, Cost and Performance P. D. Maycock Photovoltaic Energy Systems, Inc., Alexandria, VA, U.S.A. |
| C-IIIa-7 | A Large Scale PV Array Field Optimization with Numerical Simulation Technique H. Kobayashi, Y. Takeda Cent. Res. Inst. of Elec. Power. Ind., (CRIEPI) Komae-shi, Tokyo ARCO Solar Inc., Chatsworth, CA, U.S.A. |
| C-IIIa-8 | Development of a Photovoltaic System for a Multi-Family Building N. Shibuya, T. Maruyama, H. Yoshida, Y. Nakata, T. Tsuji Sharp, Shinjo-cho, Nara |

[▲ Back to TOP](#)

■ Amorphous Silicon Solar Cells-II

| | |
|---------|--|
| A-IVa-1 | Solar Bullet: The Rate of Progress in Thin Film Photovoltaics C. F. Gay ARCO Solar Inc., Chatsworth, CA, U.S.A. |
| A-IVa-2 | The Build-in Electric Field in a-Si: H pin Solar Cells X. Lin, D. Yang, Z. Xi Peking Univ. Beijing, China |
| A-IVa-3 | Photocurrent Characteristics of a-Si Cells with p-i-n Structure N. Kniffler, G. Muller, G. Winterling Messerschmitt-Bolkow-Blohm GmbH, München, F.R.G. |
| A-IVa-4 | Spectroscopic Analysis of Photocurrent Distribution in a-Si/poly Si Solar Cell H. Takakura, H. Okamoto, Y. Hamakawa Osaka Univ., Toyonaka, Osaka |
| A-IVa-5 | Limitations to the Performance of Amorphous Silicon Alloy pin Solar Cells M. Hack, M. Shur Energy Conversion Devices, Inc., Troy, MI, U.S.A. |

[▲ Back to TOP](#)

■ Module Technologies

| | |
|---------|--|
| B-IVa-1 | Solar Cell Module Construction and Mass-Production Processes R. G. Little, M. J. Nowlan Spire Corp., Bedford, MA, U.S.A. |
| B-IVa-2 | Low Cost and High Reliability Photovoltaic Modules 657 H. Nakano, T. Sugawara, H. Washida, T; Kato, S. Hayashi, A. Onoe, T. Ino* Electron Device Eng. Lab., Toshiba, Isogo-ku, Yokohama *Electron Tube and Device Division, Toshiba, Saiwai-ku, Kawasaki |

| | |
|---------|---|
| B-IVa-3 | Experimental Evaluation of Reverse Bias Stress Induced on PV Modules For Different Configurations V. Albergamo, L. Gentilin, F. Lopez Pineda*, P. Spirito** ENEA CSN Casaccia-S.P. Anguillarese, Roma, Italy *Fellow of Int. School of Physic (TRIESTE), Roma, Italy **Electrotech. Inst. Univ. of Naples, Naples, Italy |
| B-IVa-4 | Photochemical Degradation of a Solar Module R. R. Hiltabrand, S. E. Trenchard U.S. Coast Guard Res. & Development Cen. Groton, CT, U.S.A. |
| B-IVa-5 | Development of Large-Size and Light-Weight PV Modules Reinforced by Paper Honeycomb Substrate 665 K. Kurokawa, K. Yamagami, T. Tani, S. Tanaka*, S. Tsuboi*, S. Yagihashi**, Y. Maeda**, T. Hiruma***, K. Fujisawa*** Electrotechnical Lab., Sakura-mura, Ibaraki *Nippon Sheet Glass Co., Ltd., Itami, Hyogo **Hoxan Corporation, Sapporo, Hokkaido ***Japan Machinery and Metals Inspection Inst. Tokyo |

[▲ Back to TOP](#)

■ Amorphous Silicon Basic Research

| | |
|---------|--|
| P-II-20 | Electronic Doping Effects in a-Si:H p-i-n Devices T. J. McMahon, A. Madan Solar Energy Res. Inst., Golden, CO, U.S.A. |
| P-II-21 | Comparison of Air/Metal and Amorphous Silicon/Metal Interfaces for Diffuse Back Reflectors J. McGill, T. Glatfelter, B. Edgerton, W. Czubytyj Energy Conversion Devices. Inc., Troy, MI, U.S.A. |
| P-II-22 | P-I-N Thin Film Silicon Hydrogen Alloy Solar Cells: Comparison with Experiment G. B. Turner, K. W. Mitchell, R. J. Schwartz*, J. L. Gray* ARCO Solar, Inc., Chatsworth, CA, U.S.A. *Purdue Univ., West Lafayette, IN, U.S.A. |
| P-II-23 | Optical Approach to Optimization of Efficiency in Amorphous/Poly-C Solar Cells F. Demichelis, E. Minetti-Mezzetti, A. Tagliaferro, E. Tresso Politecnico di Torino, Italy |
| P-II-24 | Device Characterization and Analysis of Thin Film Silicon: Hydrogen Alloy Solar Cells K. W. Mitchell ARCO Solar, Inc., Chatsworth, CA, U.S.A. |
| P-II-25 | Detailed Modeling of Thin Film Polycrystalline and Thin Film Silicon: Hydrogen Alloy Multiple Junction Solar Cells K. W. Mitchell ARCO Solar, Inc., Chatsworth, CA, U.S.A. |
| P-II-26 | Investigations of Degraded a-Si:H-Diodes by Spectral Response and SCLC R. Plättner, W. Krühler, H. Pfeleiderer, H. Kausche, M. Möller Res. Labs. of Siemens AG, München, F.R.G. |
| P-II-27 | Transport Properties and Heterogeneities of Glow Discharged a-Si:H Films M. Kuwagaki, S. Nagata, J. Shirafuji, Y. Inuishi Osaka Univ., Suita, Osaka |
| P-II-28 | Transport Properties of rf Sputtered a-Si: H Films - Effects of Hydrogen Partial Pressures and Oxygen Incorporation K. Jiranapakul, J. Shirafuji, Y. Inuishi Osaka Univ., Suita, Osaka |
| P-II-30 | Microstructure and Conductivity of P Doped μc-Si:H H. Itozaki, N. Fujita, M. Ishii, T. Nishikawa, T. Igarashi, H. Hitotsuyanagi Sumitomo Elec. Ind., Ltd., Itami, Hyogo |
| P-II-31 | Mechanical Properties of Sputtered a-Si:H Films as a Function of Hydrogen Content T. Dragone, S. Wagner, T. D. Moustakas* Princeton Univ., Princeton, NJ, U.S.A. *Exxon Res. & Eng., Annandale, NJ, U.S.A. |
| P-II-32 | On the Structure of Glow Discharge a-Si:H, a-SiC:H and a-SiN: H Elucidated by the Gas Evolution Spectra |

| | |
|---------|---|
| | S. Nitta, A. Hatano Gifu Univ., Yanaido, Gifu |
| P-II-33 | Preparation and Properties of a-Si Films Deposited with a High Deposition Rate M. Ohnishi, H. Nishiwaki, M. Tanaka, N. Nakamura, S. Tsuda, S. Nakano, Y. Kuwano Res. Cen., Sanyo Elec. Co., Ltd., Hirakata, Osaka |
| P-II-34 | Paschen Curve and Deposition Kinetics in Plasma Process D. Yang, G. Zhang, L. Dong, Z. Xi, C. Liang, X. Lin Peking Univ., Beijing, China |
| P-II-35 | Post Deposition Effect in DC-Sputtered a-Si: H R. Koropecski, R. Arce, L. S. De Bernardez, M. Cutrera, M. Battioni, R. Buitrago INTEC (CONICET-UNL). Santa Fe, Argentina |
| P-II-36 | DC-Biased RF Plasma CVD for Hydrogenated Amorphous Silicon T. Hattori, S. Mizuki, K. Maekawa, H. Okamoto*, Y. Hamakawa* Res. & Development Planning Cen., Nippondenso Co., Ltd., Kariya, Aichi *Osaka Univ., Toyonaka, Osaka |
| P-II-37 | Microcrystalline Si_xGe_{1-x} Alloys Prepared by Sputter-Assisted-Plasma CVD K. Kohno, T. Nakashita*, T. Iwaoka*, T. Imura*, Y. Osaka* Hiroshima Denki Inst. Tech., Hiroshima *Hiroshima Univ., Higashihiroshima, Hiroshima |
| P-II-38 | Determination of Amorphous Silicon Alloy Composition by Nuclear Elastic Scattering of 12 Me V Protons R. Schwarz, S. Wager, R. T. Kouzes, R. D. Wieting* Princeton Univ., Princeton, NJ. U.S.A. *ARCO Solar Inc., Chatsworth, CA, U.S.A. |
| P-II-39 | Preparation of Fluorinated Amorphous Silicon Films Using New Source Gases H. Koinuma, H. Natsuaki, K. Fueki, K. Satoh, T. Hirano, K. Isogaya* Univ. of Tokyo, Tokyo *Mitsui Toatsu Chemicals, Inc., Tokyo |
| P-II-40 | Hydrogenated Amorphous Silicon Carbide and Silicon Nitride Prepared by DC-Glow Discharge for High Bandgap Photovoltaic Applications G. H. Bauer, G. Bilger, H.-D. Mohring, C. E. Nebel, S. M. Paasche Univ., Stuttgart, Inst. fuer Physikalische Elecktonik Stuttgart, F.R.G. |
| P-II-41 | The Boron or Phosphorus Doped a-SiC:H Films C. Y. Chang, Y. K. Fang, R. H. Lee, C. F. Huang National Cheng Kung Univ., Taiwan, China |

[▲ Back to TOP](#)

■ **Advanced Concepts for Silicon Solar Cells**

| | |
|---------|---|
| P-II-42 | Work Function of Spray-Deposited ITO Used in ITO/n-Si Solar Cells T. Nagatomo, I. Shinohara, M. Takeuchi, O. Omoto Shibaura Inst. Tech., Tokyo |
| P-II-43 | A New Fabrication Process for High Efficiency Indium Oxide/Silicon Solar Cells K. Itoh, T. Nakazawa Shinshu Univ., Wakasato, Nagana |
| P-II-44 | A Novel Type of Inversion Layer Solar Cell with Very Low Sheet Resistance T. Fuyuki, S. Moriuchi, H. Matsunami Kyoto Univ., Kyoto |
| P-II-46 | Approaches to Achieve High-Efficiency Silicon Solar Cells K.M. Koliwad, R. Kachare, J.B. Milstein* California Inst. of Tech., Jet Propulsion Lab. Pasadena, CA, U.S.A. *Solar Energy Res. Inst., Golden. CO, U.S.A. |
| P-II-47 | Photovoltaic Characteristics of Spray Pyrolyzed ZnO Films on n and p Type Silicon F.J. Garcia, M. S. Tomar, C. Mazdn Univ. Simon Bolivar, Caracas, Venezuela |

P-II-49 [The Physical Properties of CdS/poly-Si Solar Cells with Screen Printed CdS Films](#)

M.P. Hounq, T.S. Wu, S.L. Fu
National Cheng Kung Univ., Taiwan, China

[▲ Back to TOP](#)

■ Silicon Solar Cell Technology

P-II-1 [Solar-Grade Silicon for Photovoltaic Modules](#)

H.A. Aulich, F. Cammerer, F.J. Fenzl, F.-W. Schulze
Siemens AG, München, F.R.G.

P-II-2 [Current Aspects of Silicon Cutting Techniques at Wacker](#)

W. Ermer, D. Helmreich, D. Regler, D. Seifert*
Heliotronic GmbH, Burghausen, F.R.G. *Wacker Chemie, Burghausen, F.R.G.

P-II-3 [Two Dimensional Analysis of the Role of Grain-boundaries in Polycrystalline Solar Cell](#)

S. Banerjee, H. Saha
Univ. of Kalyani, West Bengal, India

P-II-4 [Crack-Free S-Web Sheets by Conversion of C-Fibres into SiC](#)

G. Hoyler, R. Falckenberg, J.G. Grabmaier
Research Labs. of Siemens AG, München, F.R.G.

P-II-5 [Photoconductivity in Polycrystalline Silicon under Low Level Conditions](#)

P.K. Singh, R. Kishore, S.N. Singh
National Phys. Lab., New Delhi, India

P-II-6 [Impurity Segregation to Grain Boundaries in Directional Solidification for Silicon Solar Cells](#)

T. Saito, M. Fujisaki*, N. Mizukami*, M. Geshi**, T. Yamada**, K. Tabata**
Microelectronics Res. Labs., NEC Corp., Kawasaki, Kanagawa *Discrete Device Division, NEC Corp., Nakaharaku, Kawasaki
Nakaharaku, Kawasaki **R&D Labs., Osaka Titanium Co., Ltd., Amagasaki, Hyogo

P-II-7 [A New Automated Plant for Low Cost Solar Cell](#)

T. Nammori, K. Nakajima, H. Toshikawa, K. Okamoto, T. Nuno, T. Tsuji
Energy Conversion Labs., Sharp Corp., Nara

P-II-8 [Silicon Slicing for Solar Cell](#)

K. Tabata, M. Geshi, K. Kaneko, M. Takatani, K. Hashimoto, M. Fujisaki*
Osaka Titanium Co., Ltd., R&D Lab., Amagasaki, Hyogo *NEC Corp., Kawasaki, Kanagawa

P-II-9 [Large Size Cast Silicon for Low Cost Solar Cells](#)

M. Fujisaki, M. Geshi*, T. Yamada*, K. Tabata*, N. Mizukami, T. Saito
NEC Corp., Kawasaki, Kanagawa *R&D Dept., Osaka Titanium Co., Ltd., Amagasaki, Hyogo

P-II-10 [Improvement of the High Temperature Process in the Low Cost Solar Cell Mass-Production](#)

H. Morita, H. Naito, T. Kato, H. Washida, H. Tsutsumi, A. Onoe
Elec. Device Eng. Lab., Toshiba Corp. Yokohama, Kanagawa

P-II-11 [NEDO Process for Production of Solar Grade Silicon 821](#)

K. Yokoe, N. Noguchi, T. Horigome
NEDO, Tokyo

[▲ Back to TOP](#)

■ Space Solar Cell Technology

P-II-13 [Characteristics of Ultrathin Silicon Solar Cells](#)

H. Ueyama, T. Matsutani, T. Saga, T. Hirano, Y. Kiyota, A. Suzuki, S. Matsuda*
*NASDA, Sakura-mura, Ibaraki Sharp Co., Shinjo-cho, Nara

P-II-14 [Space Qualified AlGaAs/GaAs Solar Cells](#)

S. Matsuda, S. Yoshida*, M. otoda*, S. Hokuyo*, K. Teramoto**, A. Kawakami
NASDA, Sakura-mura, Ibaraki *Kitaitami Works, Mitsubishi Elec. Corp., Itami, Hyogo **Kamakura Works, Mits.ubishi Elec. Corp.,
Itami, Hyogo

| | |
|---------|--|
| P-II-15 | Structural Reliability Analysis of GaAs Solar Cells for Space Utilization J. Itoh, M. Kumasawa, S. Yoshioka, M. Ohkubo* Central Res. Lab., Mitsubishi Elec. Corp., Amagasaki, Hyogo *Kamakura Works, Mitsubishi Elec. Corp. |
| P-II-16 | Development of Light-Weight Thin GaAs Solar Cells on Si Substrates S. Matsuda NASDA, Sakura-mura, Ibaraki |
| P-II-17 | Radiation Damage in GaAs and Si Solar Cells due to Protons M. Kato; K. Mitsui, S. Yoshida*, K. Yamagami*, S. Matsuda** LSI Res. & Dev. Lab., Mitsubishi Elec. Corp., Itami, Hyogo *Kitaitami Works, Mitsubishi Elec. Corp., Itami, Hyogo **NASDA, Sakura-mura, Ibaraki |
| P-II-18 | Optimization of Radiation-Resistant GaAs Solar Cell Structures C. Amano, M. Yamaguchi, A. Shibukawa Ibaraki ECL, NTT, Tokai, Ibaraki |

[▲ Back to TOP](#)

■ Closing Session

| | |
|---------|--|
| A-IVp-1 | The Past, Present and Future Development of Photovoltaic Systems in Japan T. Sasaki Sharp Corp., Abeno-ku, Osaka |
| A-IVp-2 | Future of Photovoltaics as Promised Resources D.L. Feucht SERI, Golden, CO, U.S.A. |
| A-IVp-3 | Closing Remarks K. Takahashi, Program Chairman Tokyo Inst. Tech., Tokyo |

[▲ Back to Previous Page](#)

[▲ Back to TOP](#)