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<i>Swartz, C.H. ; Edirisooriya, M. ; Ogedengbe, O.S. ; Hancock, B.L. ; Sohal, S. ; LeBlanc, E.G ; Jayathilaka, P.A.R.D. ; Noriega, O.C. ; Holtz, M. ; Myers, T.H. ; Zaunbrecher, K.N.</i>	
PHOTOLUMINESCENCE OF CRYSTALLINE CDTE DOUBLE HETEROSTRUCTURES GROWN BY MBE	1907
<i>Zaunbrecher, Katherine N. ; Dippo, Pat ; Kuciauskas, Darius ; Gessert, Timothy A. ; Barnes, Teresa M. ; Edirisooriya, Madhavie ; Jayathilaka, Pathiraja A.R.D. ; Ogedengbe, Olanrewaju S. ; Myers, Thomas H.</i>	
METHODS FOR RESISTIVITY AND THICKNESS MEASUREMENTS OF HIGH RESISTIVITY INTERFACIAL LAYERS IN PHOTOVOLTAIC TCO MULTILAYERS	1911
<i>Kaufmann, Kai ; Naumann, Volker ; Grober, Stephan ; Hagendorf, Christian</i>	
DETERMINATION OF THE OPTICAL ABSORPTION COEFFICIENTS OF A WEAKLY ABSORBING FILM ON A TRANSPARENT SUBSTRATE BY SPECTROPHOTOMETRY	1915
<i>Zapalac, Geordie</i>	
THE CHARACTERIZATION OF AL2O3 AND TiO2 ANTIREFLECTION COATINGS WITH A NOVEL X-RAY REFLECTIVITY METHOD AND OTHER EXPERIMENTAL TECHNIQUES	1919
<i>Li, Chao ; Shahriarian, Firouz ; Goorsky, Mark S.</i>	
DIRECT MEASUREMENT OF DOPANT DISTRIBUTION DEPTH IN AN INDIVIDUAL SILICON MICROPILLAR	1924
<i>Kabalan, Amal</i>	
RECENT ADVANCES IN GLOW DISCHARGE OPTICAL EMISSION SPECTROSCOPY FOR CHARACTERIZATION OF LAYERS/FILM USED IN THE PHOTOVOLTAIC FIELD	1927
<i>Hunault, Philippe ; Morin, Christophe ; Chapon, Patrick</i>	
TOWARDS MORE ACCURATE IMAGING OF THE LOCAL SATURATION CURRENT DENSITY IN SOLAR CELLS BY USING ALTERNATIVE PL EVALUATION METHODS	1929
<i>Breitenstein, Otwin ; Bauer, Jan ; Hinken, David ; Bothe, Karsten</i>	

CHARACTERIZATION OF SILICON SOLAR CELLS BY MEANS OF THEIR LUMINESCENCE UNDER HIGH FREQUENCY SINUSOIDAL EXCITATIONS	1934
<i>Azkona, Nekane ; Recart, Federico ; Rodriguez, Pedro ; Jimeno, Juan Carlos</i>	
STATE-OF-THE-ART MULTIPARAMETER CHARACTERIZATION OF THE CHEMICAL AND FIELD EFFECT PASSIVATION OF VERY HIGH LIFETIME N-SI WITH N+ FRONT SURFACE FIELD (FSF)	1939
<i>Wilson, Marshall ; Findlay, Andrew ; D'Amico, John ; Savtchouk, Alexandre ; Lagowski, Jacek</i>	
EFFECT OF SERIES RESISTANCE ON DEGRADATION OF ISC, POWER OUTPUT AND FILL FACTOR OF HIT TECHNOLOGY	1944
<i>Singh, Rashmi ; Bora, Birinchi ; Yadav, Kamlesh ; Sastry, O.S. ; Kumar, Mithilesh ; Kumar, Avinash ; Renu ; Bangar, Manander ; Rai, Supriya ; Kumar, Arun</i>	
ANALYSES OF DIAMOND WIRE SAWN WAFERS: EFFECT OF VARIOUS CUTTING PARAMETERS	1949
<i>Sopori, Bhushan ; Basnyat, Prakash ; Devayajanam, Srinivas ; Schnepf, Rekha ; Sahoo, Santosh ; Gee, James ; Severico, Ferdinando ; Manens, Antoine ; Seigneur, Hubert ; Schoenfeld, Winston V. ; Preece, Steve</i>	
IDENTIFICATION OF EL2 AS THE LIFETIME-LIMITING DEFECT USING TEMPERATURE-DEPENDENT PHOTOLUMINESCENCE DECAY WITH LINEARIZATION METHOD TO DECOUPLE EFFECTS OF DIFFUSION AND SURFACE RECOMBINATION	1955
<i>Gerber, Martin ; Kleiman, Rafael</i>	
MODELS FOR LOW ENERGY ELECTRON BEAM INDUCED CURRENT EXPERIMENTS IN POLYCRYSTALLINE THIN FILM PHOTOVOLTAICS	1961
<i>Haney, Paul M. ; Yoon, Heayoung P. ; Koirala, Prakash ; Collins, Robert W. ; Zhitenev, Nikolai B.</i>	
MINORITY CARRIER DIFFUSION LENGTH MEASUREMENTS IN SOLAR CELLS BY ELECTRON BEAM INDUCED CURRENT	1965
<i>Maximenko, Sergey I. ; Walters, Robert J.</i>	
EFFICIENT APPROXIMATION OF PHOTOVOLTAIC MODEL USING DEPENDENT THEVENIN EQUIVALENT CIRCUIT BASED ON EXPONENTIAL SUMS FUNCTION	1969
<i>Mohamed, Mohamed Abd-El-Hakeem</i>	
APPLICATIONS OF THE GREEN'S EXPRESSION FOR SATURATION CURRENT VS. BANDGAP IN SI AND CIGS SOLAR CELLS	1975
<i>Abenante, Luigi ; Tucci, Mario</i>	
THEORY AND ANALYSIS OF TEMPERATURE COEFFICIENT OF OPEN-CIRCUIT VOLTAGE (DVOC/DT) IN HETEROJUNCTION SOLAR CELLS	1979
<i>Grover, Sachit ; Li, Jian V.</i>	
EFFECTS OF N-TYPE HYDROGENATED MICROCRYSTALLINE SILICON OXIDE FILM ON PERFORMANCE OF A-SI/C-SI HETEROJUNCTION SOLAR CELLS	1982
<i>Zhang, Yue ; Yu, Cao ; Yang, Miao ; Yan, Hui ; Zhang, Jinyan ; Xu, Xixiang</i>	
A THOROUGH WAY OF MAPPING EFFICIENCY WITH PHOTOLUMINESCENCE	1987
<i>Ogutman, Kortan ; Davis, Kristopher O. ; Schneller, E. ; Yelundur, Vijay ; Schoenfeld, Winston V.</i>	
MODELING OF THE HYDROGEN SELECTIVE EMITTER FOR N-TYPE SILICON SOLAR CELLS	1991
<i>Young, Matthew G. ; Mohammed, Hafeezuddin ; Cousar, Larry ; Pop, Sergiu C. ; Schulze, Ralf ; Jianming Wang ; Hutchings, Douglas ; Shumate, Seth</i>	
EXPERIMENTAL AND SIMULATED ANALYSIS OF P A-SI:H DEFECTS ON SILICON HETEROJUNCTION SOLAR CELLS: TRADE-OFFS BETWEEN VOC AND FF	1996
<i>Zhang, L. ; Das, U.K. ; Shu, Z. ; Liu, H. ; Birkmire, R.W. ; Hegedus, S.S.</i>	
INVESTIGATION OF LIGHT-INDUCED DEGRADATION ON P-TYPE MULTI-CRYSTALLINE SILICON PERC CELLS	2001
<i>Kuo-Yi Yen ; Shao-Peng Su ; Chen, Sean H.T. ; Li-Wei Cheng</i>	
CONSIDERATIONS IN THE EXTRACTION OF PHYSICALLY SIGNIFICANT PARAMETERS FOR VARIOUS C-SI CELL ARCHITECTURES	2004
<i>Schneller, Eric J. ; Davis, Kristopher O. ; Ogutman, Kortan ; Schoenfeld, Winston V.</i>	
APPLICATION OF ION IMPLANTED EMITTER IN PERC SOLAR CELLS	2008
<i>Wu, Jian ; Yunyu Liu ; Wang, Xusheng ; Guoqiang Xing</i>	
EPITAXIAL EMITTER REVERSE SATURATION CURRENT DENSITY: MODELING AND EXPERIMENTAL VALIDATION	2014
<i>Renshaw, John ; Gee, James</i>	
A KINETIC MONTE CARLO APPROACH TO STUDY TRANSPORT IN AMORPHOUS SILICON/CRYSTALLINE SILICON HIT CELLS	2018
<i>Muralidharan, Pradyumna ; Vasileska, Dragica ; Goodnick, Stephen M. ; Bowden, Stuart</i>	
MODELING OF SILICON HETEROJUNCTION SOLAR CELLS	2022
<i>Luppina, Pietro ; Lugli, Paolo ; Goodnick, Stephen M.</i>	

LASER-INDUCED DAMAGE FOR CRYSTALLINE SILICON SOLAR CELLS	2028
<i>Otaegi, Alona ; Fano, Vanesa ; Rasool, Muhammad Azam ; Gutierrez, Jose Ruben ; Jimeno, Juan Carlos ; Cereceda, Eneko</i>	
HIGH IMPLIED VOC (>715 MV) AND LOW EMITTER SATURATION CURRENT DENSITY (-10FA/CM2) FROM A LIGHTLY B DOPED IMPLANTED EMITTER	2032
<i>Young-woo Ok ; Upadhaya, Ajay D ; Rounsaville, Brian ; Madini, Keeya ; Jones, Keenan ; Ryu, Kyungsun ; Chandrasekaran, Vinodh ; Das, Arnab ; McPherson, Bruce ; Gupta, Atul ; Rohatgi, Ajeet</i>	
SILICON EPITAXY BY LOW-TEMPERATURE RF-PECVD USING SIF4/H2/AR GAS MIXTURES FOR EMITTER FORMATION IN CRYSTALLINE SOLAR CELLS	2035
<i>Leal, Ronan ; Dornstetter, Jean-Christophe ; Haddad, Farah ; Poulain, Gilles ; Maurice, Jean-Luc ; Cabarrocas, Pere Roca i</i>	
INVESTIGATION OF LASER PATTERN FOR HIGH EFFICIENCY PERC MONO SILICON SOLAR CELLS	2040
<i>Kuo, Cheng-Wen ; Kuan, Ta-Ming ; Shin-ing Peng ; Huang, Chih-Chiang ; Wu, Li-Guo ; Yu, Cheng-Yeh</i>	
DOUBLE-HETEROJUNCTION CRYSTALLINE SILICON SOLAR CELL WITH ELECTRON-SELECTIVE TiO2 CATHODE CONTACT FABRICATED AT 100°C WITH OPEN-CIRCUIT VOLTAGE OF 640 MV	2043
<i>Jhaveri, Janam ; Nagamatsu, Ken A. ; Berg, Alexander H. ; Man, Gabriel ; Sahasrabudhe, Girija ; Wagner, Sigurd ; Schwartz, Jeffrey ; Kahn, Antoine ; Sturm, James C.</i>	
RELEVANCE OF TCO WORKFUNCTION IN N-SILICON OXIDE EMITTER - C-SI (P) HETEROJUNCTION SOLAR CELL	2047
<i>Izzi, M. ; Serenelli, L. ; Mangiapane, P. ; Salza, E. ; Tucci, M. ; Delia Noce, M. ; Usatti, I. ; Bobeico, E. ; Mercaldo, L.V. ; Lancellotti, L. ; Delli Veneri, P. ; Caputo, D. ; de Cesare, G.</i>	
MEASUREMENT OF METAL INDUCED RECOMBINATION IN SOLAR CELLS	2051
<i>Inns, Daniel ; Poplavskyy, Dmitry</i>	
21 % P-TYPE INDUSTRIAL PERC CELLS WITH HOMOGENEOUS EMITTER PROFILE AND THERMALLY GROWN OXIDATION LAYER	2055
<i>Lung-Chieh Cheng ; Ming-Chun Kao ; Hsi-Hao Huang ; Po-Sheng Huang ; Li-Wei Cheng</i>	
TEMPERATURE DEPENDENT ANALYSIS OF HETEROJUNCTION SILICON SOLAR CELLS: ROLE OF INTRINSIC LAYER THICKNESS	2058
<i>Agarwal, Mohit ; Dusane, Rajiv O.</i>	
AN EXTENDIBLE BEYOND 20% EFFICIENCY COST-EFFICIENT BIFACIAL CELL USING BORON & PHOSPHORUS IMPLANTATION TECHNOLOGY AND ITS PROSPECTS FOR THE FUTURE PRODUCTION	2062
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LOWLY DOPED EMITTERS FOR CRYSTALLINE SILICON SOLAR CELLS	2068
<i>Fano, V. ; Rasool, M.A. ; Habib, A. ; Otaegi, A. ; Gutierrez, J.R. ; Jimeno, J.C. ; Azkona, N.</i>	
MERCURY: INDUSTRIAL IBC CELL WITH FRONT FLOATING EMITTER FOR 20.9% AND HIGHER EFFICIENCY	2073
<i>Mewe, Agnes ; Spinelli, Pierpaolo ; Burgers, Antonius ; Janssen, Gaby ; Guillemin, Nicolas ; van de Loo, Bas ; Kessels, Erwin ; Ylooswijk, Ard ; Geertjgs, Bail ; Cesar, Ilkay</i>	
IMPLEMENTATION OF TUNNELING PASIVATED CONTACTS INTO INDUSTRIALLY RELEVANT N-CZ SI SOLAR CELLS	2079
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IDENTIFYING REPRESENTATIVE AIR MASSES FOR MULTI-JUNCTION SOLAR CELL BANDGAP OPTIMIZATION TO MAXIMIZE ANNUAL ENERGY YIELD	2082
<i>Yandt, Mark D. ; Hinzer, Karin ; Schriemer, Henry</i>	
INFLUENCE OF HIGH GROWTH RATE ON GAAS-BASED SOLAR CELLS GROWN BY METALORGANIC CHEMICAL VAPOR DEPOSITION	2086
<i>Zhang, Chaomin ; Yeongho Kim ; Ebert, Chris ; Faleev, Nikolai N. ; Honsberg, Christiana B.</i>	
CRYSTALLINE SI SOLAR CELLS FABRICATED BY CO2 LASER DOPING	2091
<i>Ishikawa, Yasuaki ; Honda, Tatsuki ; Yoshinaga, Seiya ; Jiang, Yunjian ; Uraoka, Yukiharu ; Watanabe, Yosuke ; Ikenoue, Hiroshi</i>	
A NOVEL GAP/INGAAS/INGASB TRIPLE JUNCTION PHOTOVOLTAIC CELL WITH OPTIMIZED QUANTUM EFFICIENCY	2094
<i>Tiwari, Bibek ; Penumaka, Raja ; Bhattacharya, Indranil ; Mahajan, Satish M. ; Foo, Simon</i>	
QUANTUM DOT ARRAY BASED INTERMEDIATE BAND SOLAR CELL: EFFECT OF LIGHT CONCENTRATION	2098
<i>Tomic, Stanko ; Sogabe, Tomah ; Okada, Yoshitaka</i>	

EVALUATION OF STRAINED INALAS AS A WINDOW LAYER FOR WIDE BANDGAP MATERIALS LATTICE MATCHED TO INP	2101
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