

Publication List

Hannes Wagner

- (1) M. Schwabe, S. Küchemann, H. Wagner, D. Bedorf and K. Samwer, "Activation volume of microscopic processes in amorphous $\text{Pd}_{77.5}\text{Cu}_{6.0}\text{Si}_{16.5}$ due to stress and temperature", *Journal of Non-Crystalline Solids*, 357, pp. 490-493, (2011)
- (2) H. Wagner, D. Bedorf, S. Küchemann, M. Schwabe, B. Zhang, W. Arnold and K. Samwer, "Local elastic properties of a metallic glass", *Nature Materials*, 10 (6), pp. 439-442, (2011)
- (3) S. Steingrube, H. Wagner, H. Hannebauer, S. Gatz, Yang Yang, Renyu Chen, S.T. Dunham, P.P. Altermatt and R. Brendel, "Loss analysis and improvements of industrially fabricated Cz-Si solar cells by means of process and device simulations", *Energy Procedia* 8, pp. 263-268, (2011)
- (4) T. Ohrdes, S. Steingrube, H. Wagner, C. Zechner, G. Letay, R. Chen, S.T. Dunham, and P.P. Altermatt, "Solar cell emitter design with PV-tailored implantation", *Energy Procedia* 8, pp. 167-173, (2011)
- (5) H. Wagner, A. Dastgheib-Shirazi, R. Chen, S.T. Dunham, M. Kessler and P.P. Altermatt, "Improving the predictive power of modeling the emitter diffusion by fully including the phosphosilicate glass (PSG) layer", *Proc. 37th IEEE Photovoltaic Specialists Conference*, Seattle, WA, USA (2011)
- (6) R. Chen, H. Wagner, A. Dastgheib-Shirazi, M. Kessler, Z. Zhu, V. Shutthanandan, P. P. Altermatt and S. T. Dunham, "A model for phosphosilicate glass deposition via POCl_3 for control of phosphorus dose in Si", *Journal of Applied Physics*, 112 (2012)
- (7) G. Fischer, M. Müller, H. Wagner, S. Steingrube and P. P. Altermatt, "A combined Statistical and TCAD Model as a method for understanding and reducing variations in multicrystalline Si solar cell production", *Energy Procedia* 27, pp. 203-207, (2012)
- (8) R. Chen, H. Wagner, A. Dastgheib-Shirazi, M. Kessler, Z. Zhu, P. P. Altermatt and S. T. Dunham, "Understanding Coupled Oxide Growth and Phosphorus Diffusion in POCl_3 Deposition for Control of Phosphorus Emitter Diffusion", *Proc. 38th IEEE Photovoltaic Specialists Conference*, Austin, TX, USA (2012)
- (9) H. Wagner, S. Steingrube, B. Wolpensinger, A. Dastgheib-Shirazi, R. Chen, S.T. Dunham and P.P. Altermatt, "Analyzing emitter dopant inhomogeneities at textured Si surfaces by using 3D process and device simulations in combination with experimental imaging approaches", *Proc. 38th IEEE Photovoltaic Specialists Conference*, Austin, TX, USA (2012)
- (10) A. Dastgheib-Shirazi, M. Steyer, G. Micard, H. Wagner, P.P. Altermatt and G. Hahn, "Effects of Process Conditions for the n_+ -Emitter Formation in Crystalline Silicon", *Proc. 38th IEEE Photovoltaic Specialists Conference*, Austin, TX, USA (2012)
- (11) M. Steyer, A. Dastgheib-Shirazi, H. Wagner, P. Altermatt and G. Hahn, "A study of various methods for analysis of the phosphosilicate glass layer", *Proc. 27th European Photovoltaic*

Solar Energy Conference and Exhibition, Frankfurt, Germany (2012)

- (12) G. Micard, A. Dastgheib-Shirazi¹, M. Steyer, H. Wagner, P.P. Altermatt and G. Hahn, "Advances in the Understanding of Phosphorus Silicate Glass (PSG) Formation for Accurate Process Simulation of Phosphorus Diffusion", Proc. 27th European Photovoltaic Solar Energy Conference and Exhibition, Frankfurt, Germany (2012)
- (13) H. Wagner, M. Müller, G. Fischer and P.P. Altermatt, "Modeling of multicrystalline Si solar cells based on lifetime distributions", Proc. 27th European Photovoltaic Solar Energy Conference and Exhibition, Frankfurt, Germany (2012)
- (14) H. Wagner, M. Müller, G. Fischer, and P. P. Altermatt, "A simple criterion for predicting multicrystalline Si solar cell performance from lifetime images of wafers prior to cell production" , Journal of Applied Physics, 114 (2013)
- (15) S. Küchemann, H. Wagner, M. Schwabe, D. Bedorf, W. Arnold and K. Samwer, „Stored mechanical work in inhomogeneous deformation processes of the bulk metallic glass Pd₄₀Ni₄₀P₂₀“,METALLURGICAL AND MATERIALS TRANSACTIONS A, 1-4 (2013)
- (16) B. Michell, H. Wagner, P.P. Altermatt and T. Trupke, "Predicting solar cell efficiencies from bulk lifetime images of multicrystalline silicon bricks", Energy Procedia 38, pp. 147-152, (2013)
- (17) A. Shirazi, H. Wagner, P.P. Altermatt and G. Hahn, "Relation between diffusion parameters and phosphorus precipitation during the POCl₃-diffusion process", Energy Procedia 38, pp. 254-262, (2013)
- (18) H. Wagner, T. Ohrdes, A. Shirazi, B. Puthen-Veetil, D. König and P. Altermatt, "Overcoming Phosphorus Emitter Limitations in PERC Si Solar Cells by using a Gallium-Phosphide Heteroemitter", Proc. 39th IEEE Photovoltaic Specialists Conference, Tampa, FL, USA (2013)
- (19) A. Dastgheib-Shirazi, G. Micard, H.Wagner, M. Steyer, P.P. Altermatt and G. Hahn, "Towards an Optimized Emitter for Screen Printed Solar Cells", Proc. 39th IEEE Photovoltaic Specialists Conference, Tampa, FL, USA (2013)
- (20) N.Wehmeier, G. Schraps, B. Lim, N. P. Harder, P. Altermatt, Hannes Wagner: Boron-doped PECVD silicon oxides as diffusion sources for simplified high-efficiency solar cell fabrication, Proc. 28th European Photovoltaic Solar Energy Conference and Exhibition, Paris, France (2013)
- (21) M. Müller, G. Fischer, H. Wagner, P. Altermatt, "Understanding and reducing the variations in multicrystalline Si solar cell production", Proc. 28th European Photovoltaic Solar Energy Conference and Exhibition, Paris, France (2013)
- (22) H. Wagner, T. Ohrdes, A. Shirazi, B. Puthen-Veetil, D. König and P. P. Altermatt, "A numerical simulation study of gallium-phosphide/silicon heterojunction passivated emitter and rear solar cells", Journal of Applied Physics, 115 (2014)
- (23) M. Müller, P. P. Altermatt, H. Wagner, and G. Fischer, "Sensitivity Analysis of Industrial Multicrystalline PERC Silicon Solar Cells by Means of 3-D Device Simulation and Metamodeling", IEEE Journal of Photovoltaics, 4 (2014)

- (24) B. Mitchell, D. Macdonald, J. Schön, J. W. Weber, H. Wagner, and Thorsten Trupke "Imaging As-Grown Interstitial Iron Concentration on Boron-Doped Silicon Bricks via Spectral Photoluminescence", IEEE Journal of Photovoltaics, (2014)
- (25) B. Min, H. Wagner, A. Dastgheib-Shirazi, A. Kimmerle, H. Kurz, P. P. Altermatt, "Heavily doped Si: P emitters of crystalline Si solar cells: recombination due to phosphorus precipitation", Physica Status Solidi (RRL), 1-5 (2014)
- (26) H. Wagner, M. Büchsenschütz-Göbeler, Y. Luo, A. Kumar, W. Arnold, and K. Samwer, "Measurement of local internal friction in metallic glasses", Journal of Applied Physics, 115 (2014)
- (27) B. Min, H. Wagner, A. Dastgheib-Shirazi, and P.P. Altermatt, "Limitation of industrial phosphorus-diffused emitters by SRH recombination", 4th SiliconPV Conference (2014)
- (28) Adnan Ali, Pietro P. Altermatt, Tobias Ohrdes, Hannes Wagner, "Conceptual Comparison Between Standard Si Solar Cells and Back Contacted Cells", 4th SiliconPV Conference (2014)
- (29) H. Wagner, T. Ohrdes, B. Mitchell, A. E. Morishige, T. Buonassisi, and P. P. Altermatt, "Pathway to Predict Solar Cell Efficiencies from As-Grown Multicrystalline Silicon Bricks", Proc. 40th IEEE Photovoltaic Specialists Conference, Denver, CO, USA (2014)
- (30) S. Limpert, K. Ghosh, H. Wagner, S. Bowden, C. Honsberg, S. Goodnick, S. Bremner, A. Ho-Baillie, and M. Green, "Results from Coupled Optical and Electrical Sentaurus TCAD Models of a Gallium Phosphide on Silicon Electron Carrier Selective Contact Solar Cell", Proc. 40th IEEE Photovoltaic Specialists Conference, Denver, CO, USA (2014)