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Detailed List of Lifetime and SunsVoc Papers

The list below contains papers that use Sinton equipment or provide relevant theory. The papers are sorted by year of publication and then alphabetically by first author. There is a form at the bottom of the page where you can add references we may have missed.

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- 2006
- 2005
- 2004
- 2003
- 2002
- 2001
- 2000
- 1999
- 1998
- 1997
- 1996
- 1994
- 1993
- 1990
- Pre-1990
2006


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K. Lauer, M. Ghosh, A. Lawerenz, and S. Dauwe, "Minority Carrier Lifetime, Trap Density and Interstitial Iron Content in Multicrystalline Silicon Raw Wafers Versus Ingot


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2005


P. J. Cousins, N. B. Mason, and J. E. Cotter, "Manufacturing and Design Issues for Thin Silicon Solar Cells Manufactured on FZ(B), MCz(B), Cz(Ga) and Cz(B) Wafers.,” *Conference Record of the Thirty-First IEEE Photovoltaic Specialists Conference*, pp. 987-990, Jan 2005.


B. Hoex, A.J.M. van Erven, R.C.M. Bosch, W.T.M. Stals, M.D. Bijker, P.J. van den Oever, W.M.M. Kessels, and M.C.M. van de Sanden, "Industrial high-rate (similar to 5


M. McCann, K. Weber, and A. Blakers, "Surface passivation by rehydrogenation of silicon-nitride-coated silicon wafers," *Progress in Photovoltaics*, vol. 13, no. 3, pp. 195-


Discusses the device physics of flash-test measurement of high-efficiency cells and modules. An accurate flash-test methodology for high-efficiency silicon cells is demonstrated.


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P.I. Widenborg, A. Straub, and A.G. Aberle, "Epitaxial thickening of AIC poly-Si seed


**2004**


P.J. Cousins, D.H. Neuhaus, and J.E. Cotter, "Experimental verification of the effect of


Complete mathematical description of the SunsVoc measurement and correction for very high voltage devices.


A model application for QSSPC to study SRH bulk recombination with practical implications. Uses the lifetime tester to measure the iron concentration in silicon.


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S. Riepe, M. Ghosh, A. Müller, H. Lautenschlager, D. Grote, W. Warta, and R. Schindler,

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Demonstrates how to measure iron concentration in silicon blocks and determine how the wafers will perform during processing.


Discusses how to get useful lifetime measurement on raw wafers without any sample preparation.


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An example of the use of QSSPC to characterize Si:Ge epi layers on silicon wafers.


Overview of QSSPC analysis and applications in a handbook format.


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Suns-Voc used in the optimization of emitter sheet resistance in a front surface field (FSF) cell structure


Discusses the effect of changes in the width of the depletion region on steady state measurements at low injection levels of around 1e13 cm^{-3}


Generalization of QSSPC for temperature-dependent measurements.


G. Coletti, S. De Iuliis, M. Galluppi, and F. Ferrazza, "A Method For Industrial Characterisation Of Crystalline Silicon Wafers," *Conference Record of the Twenty Ninth


Generalization of QSSVOC math to cover cases from Steady-state to OCVD (transient) measurements.


2001


Comparison of the Suns Voc method with curve fitting the double diode model.


Description of the SunsVoc measurement and correction for very high voltage devices.


2000


A very nice application note for using 2 wavelengths of light for separating surface and bulk recombination


M. Kerr, J. Schmidt, and A. Cuevas, "Comparison of the open circuit voltage of

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The first major reference for the QSSVOC technique.

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1999


The math for analyzing data using the fully time dependent solutions rather than the steady-state or transient limits.


Covers the practical use of SunsVoc and lifetime testers at various stages during cell processing.

1998


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Review of early results from studies using QSSPC


1997


Tutorial-style paper concerning applications of QSSPC measurements to solar cells.


1996


First major reference for QSSPC photoconductance method.


1994


1993


Describes using series resistance measurements on modern high-efficiency devices and an explanation of two-dimensional effects.

S.K. Pang, and A. Rohatgi, "A new methodology for separating Shockley-Read-Hall

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**1990**


**Archives**


The classic reference for using illumination-Voc curves for the analysis of solar cells.


Classic reference for a method to separate bulk recombination from dopant diffusion recombination on lightly-doped wafers using the injection-level dependence of lifetime.


Determination of the ambipolar recombination coefficient at 1.66e-30 cm$^6$/s +or-15%.

