

MRS **Advances**

Energy-Transfer, Storage and Conversion

<https://doi.org/10.1557/adv.2019.198> Published online by Cambridge University Press

MRS Advances: Energy-Transfer, Storage and Conversion

Associate Editors:

Elizabeth L. Fleischer, *Materials Research Society, USA*

Marian Kennedy, *Clemson University, USA*

Principal Editors:

Takuya Matsui, *National Institute of Advanced Industrial Science and Technology, Japan*

Bin Liu, *Nanyang Technological University, Singapore*

Wilhelm Pfleging, *Karlsruhe Institute of Technology, Germany*

Lin Wang, *Center for High Pressure Science and Technology Advanced Research (HPSTAR), China*

Alexander Sprafke, *Halle-Wittenburg University, Germany*

Karthik Ramasamy, *UbiQD Inc, USA*

John Stuart McCloy, *Washington State University, USA*

MRS Advances Editorial Board:

Editor-in-Chief: David F. Bahr, *Purdue University, USA*

Asa Barber, *University of Portsmouth, United Kingdom*

Meenakshi Dutt, *Rutgers University, USA*

Elizabeth L. Fleischer, *Materials Research Society, USA*

Marian Kennedy, *Clemson University, USA*

Marilyn L. Minus, *Northeastern University, USA*

Roger J. Narayan, *University of North Carolina/North Carolina State University, USA*

Ruth Schwaiger, *Karlsruhe Institute of Technology, Germany*

Jeremy Theil, *Mountain View Energy, USA*

Materials Research Society Editorial Office, Warrendale, PA, USA:

Ellen W. Kracht, *Publications Manager*

Susan Dittrich, *Journals Editorial Assistant*

Kirby L. Morris, *Journals Production Assistant*

Eileen M. Kiley, *Director of Communications*

Disclaimer

Authors of each article appearing in this Journal are solely responsible for all contents in their article(s) including accuracy of the facts, statements, and citing resources. Facts and opinions are solely the personal statements of the respective authors and do not necessarily represent the views of the editors, the Materials Research Society, or Cambridge University Press.

MRS Advances (EISSN: 2059-8521) is published by Cambridge University Press, One Liberty Plaza, Floor 20, New York, NY 10006 for the Materials Research Society.

Copyright © 2019, Materials Research Society. All rights reserved. No part of this publication may be reproduced, in any form or by any means, electronic, photocopying, or otherwise, without permission in writing from Cambridge University Press. Policies, request forms and contacts are available at: <http://www.cambridge.org/rights/permissions/permission.htm>. Permission to copy (for users in the USA) is available from Copyright Clearance Center at: <http://www.copyright.com>, email: info@copyright.com.

Purchasing Options:

Premium Subscription- Premium Subscription includes current subscription and one year's lease access to the full MRS Online Proceedings Library Archive for \$7,219.00 / £4,888.00 / €6,647.00. *Subscription-* Subscription with perpetual access to the content subscribed to in a given year, including three years of back-file lease access to content from the MRS Online Proceedings Library Archive. The price for a 2018 subscription is \$3,019.00 / £1,948.00 / €2,625.00. *MRS Members-* Access to *MRS Advances* is available to all MRS members without charge.

Contact Details:

For all inquiries about pricing and access to *MRS Advances*, please get in touch via the following email addresses: online@cambridge.org (for the Americas); library.sales@cambridge.org (for UK, Europe, and rest of world).

cambridge.org/adv

CONTENTS

ARTICLES

- Greenhouse Effect in Photovoltaic Cells to Enhance Efficiency of Power Beam Conversion 897**
Andrei Sergeev, Andrew Hewitt, Harry Hier,
C. Mike Waits, Myles A. Steiner,
and Kimberly Sablon
- Modeling TPV Devices Based on Exact Analytical Solution of the Generalized Shockley – Queisser Model 905**
Andrei Sergeev, Sunny Karnani,
and C. Mike Waits
- Controlling Band Alignment at the Back Interface of Cadmium Telluride Solar Cells using ZnTe and Te Buffer Layers 913**
Fadhil K. Alfadhili, Adam B. Phillips,
Geethika K. Liyanage, Jacob M. Gibbs,
Manoj K. Jamarkattel, and Michael J. Heben
- Synthesis and Characterization of *c*-axis Oriented Zinc Oxide Thin Film and Its Use for the Subsequent Hydrothermal Growth of Zinc Oxide Nanorods 921**
S.F.U. Farhad, N.I. Tanvir, M.S. Bashar,
and M. Sultana
- Design and Simulation of the Bifacial III-V-nanowire-on-Si Solar Cell 929**
Anastasiia Fedorenko, Mohadeseh A. Baboli,
Parsian K. Mohseni, and Seth M. Hubbard
- Effect of Solution pH and Post-annealing Temperatures on the Optical Bandgap of the Copper Oxide Thin Films Grown by Modified SILAR Method 937**
S.F.U. Farhad, S. Majumder, Md. A. Hossain,
N.I. Tanvir, R. Akter, and Md. A.M. Patwary
- Effect of Cation Ratios and Monoethanolamine on the Morphology of Solution Processed $\text{Cu}_2\text{ZnSnS}_4$ Films 945**
Jitendra Kumar and Sarang Ingole

Quantum Dots as Photocatalysts for Bicarbonate Reduction to Solar Fuels: Formate Production from CuS, CuInS₂, and CuInS₂/ZnS953
Hanqing Pan, Ruwini Rajapaksha,
and Michael D. Heagy