

MRS Advances

# Electronics, Magnetics and Photonics

<https://doi.org/10.1557/adv.2017.251> Published online by Cambridge University Press

# MRS Advances: Electronics, Magnetics and Photonics

## Associate Editor:

Jeremy Theil, *Mountain View Energy*

## Principal Editors:

Jeff McCallum, *University of Melbourne*  
Franck Natali, *Victoria University of Wellington*  
Takao Someya, *The University of Tokyo*

Yifei Sun, *Purdue University*  
Martin Kuball, *University of Bristol*

## MRS Advances Editorial Board:

**Editor-in-Chief:** David F. Bahr, *Purdue University*  
Asa Barber, *University of Portsmouth, United Kingdom*  
Meenakshi Dutt, *Rutgers University*  
Elizabeth L. Fleischer, *Materials Research Society*

Marian Kennedy, *Clemson University*  
Marilyn L. Minus, *Northeastern University*  
Roger J. Narayan, *University of North Carolina/North Carolina State University*  
Jeremy Theil, *Mountain View Energy*

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

Ellen W. Kracht, *Publications Manager*  
Susan Ditrach, *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 © 2017, 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](mailto: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 2017 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](mailto:online@cambridge.org) (for the Americas); [library.sales@cambridge.org](mailto:library.sales@cambridge.org) (for UK, Europe, and rest of world).

[cambridge.org/adv](http://cambridge.org/adv)

# CONTENTS

<b>* Temperature Dependence Studies of Er Optical Centers in GaN Epilayers Grown by MOCVD . . . . .</b>	<b>135</b>
V.X. Ho, S.P. Dail, T.V. Dao, H.X. Jiang, J.Y. Lin, J.M. Zavada, and N.Q. Vinh	
<b>Aloe-vera Mediated Synthesis of Eu<sup>3+</sup> Doped CaIn<sub>2</sub>O<sub>4</sub>-carbon Hybrid Nanostructure and its Light Emission Properties . . . . .</b>	<b>141</b>
Barkha Tiwari, Shanker Ram, and Pallab Banerji	
<b>Synthesis and Characterization of CaF<sub>2</sub> Thin Films Doped with Tb<sup>3+</sup> . . . . .</b>	<b>147</b>
A. Méndez-Blas, E. López-Cruz, G. Palestino, and M.E. Calixto	
<b>Spin Polarized Conduction and Valence Band States in GdN . . . . .</b>	<b>153</b>
Muhammad Azeem	
<b>High-power Eu-doped GaN Red LED Based on a Multilayer Structure Grown at Lower Temperatures by Organometallic Vapor Phase Epitaxy . . . . .</b>	<b>159</b>
W. Zhu, B. Mitchell, D. Timmerman, A. Koizumi, T. Gregorkiewicz, and Y. Fujiwara	
<b>Effect of the Growth Temperature and Nitrogen Precursor on the Structural and Electrical Transport Properties of SmN Thin Films . . . . .</b>	<b>165</b>
Jay R. Chan, Mohamed Al Khalfoui, Stéphane Vézian, Joe Trodahl, Benjamin Damilano, and Franck Natali	
<b>Effect of Cylinder Height on Directional Photoluminescence from Highly Luminous Thin Films on Periodic Plasmonic Arrays . . . . .</b>	<b>173</b>
Motoharu Saito, Shunsuke Murai, Hiroyuki Sakamoto, Masanori Yamamoto, Ryosuke Kamakura, Takayuki Nakanishi, Koji Fujita, Yasuchika Hasegawa, and Katsuhisa Tanaka	

\*Invited Paper

<b>Structural and Optical Studies of InGaN/GaN Superlattices Implanted with Eu Ions. . . . .</b>	<b>179</b>
Jingzhou Wang, Venkata R. Thota, Eric A. Stinaff, Mohammad Ebdah, Andre Anders, and Wojciech M. Jadwisienczak	
<b>Epitaxial GdN/SmN-based Superlattices Grown by Molecular Beam Epitaxy . . . . .</b>	<b>189</b>
Franck Natali, Joe Trodahl, Stéphane Vézian, Antoine Traverson, Benjamin Damilano, and Ben Ruck	