

**UCC Library and UCC researchers have made this item openly available.  
Please [let us know](#) how this has helped you. Thanks!**

<b>Title</b>	Preface - focus issue on thermoelectric materials & devices: Phonon engineering, advanced materials and thermal transport
<b>Author(s)</b>	O'Dwyer, Colm; Chen, Renkun; He, Jr-Hau; Lee, Jaeho; Razeeb, Kafil M.
<b>Publication date</b>	2017-02-22
<b>Original citation</b>	O'Dwyer, C., Chen, R., He, J.-H., Lee, J. and Razeeb, K. M. (2017) 'Preface - Focus Issue on Thermoelectric Materials & Devices: Phonon Engineering, Advanced Materials and Thermal Transport', ECS Journal of Solid State Science and Technology, 6(3), pp. Y3. doi: 10.1149/2.0161703jss
<b>Type of publication</b>	Article (peer-reviewed)
<b>Link to publisher's version</b>	<a href="http://jss.ecsdl.org/content/6/3/Y3.full">http://jss.ecsdl.org/content/6/3/Y3.full</a> <a href="http://dx.doi.org/10.1149/2.0161703jss">http://dx.doi.org/10.1149/2.0161703jss</a> Access to the full text of the published version may require a subscription.
<b>Rights</b>	© 2017 The Electrochemical Society. [DOI: 10.1149/2.0161703jss] All rights reserved. Published February 22, 2017. This paper is part of the JSS Focus Issue on Thermoelectric Materials & Devices: Phonon Engineering, Advanced Materials and Thermal Transport.
<b>Item downloaded from</b>	<a href="http://hdl.handle.net/10468/5526">http://hdl.handle.net/10468/5526</a>

Downloaded on 2023-03-26T12:22:32Z



JSS FOCUS ISSUE ON THERMOELECTRIC MATERIALS & DEVICES

## Preface—Focus Issue on Thermoelectric Materials & Devices: Phonon Engineering, Advanced Materials and Thermal Transport

Colm O'Dwyer,<sup>a,b,\*</sup> Renkun Chen,<sup>c</sup> Jr-Hau He,<sup>d,\*</sup> Jaeho Lee,<sup>e</sup> and Kafil M. Razeeb<sup>b,\*</sup>

<sup>a</sup>Department of Chemistry, University College Cork, Cork T12 YN60, Ireland

<sup>b</sup>Tyndall National Institute, University College Cork, Lee Maltings, Cork T12 R5CP, Ireland

<sup>c</sup>Department of Mechanical and Aerospace Engineering, University of California, San Diego, La Jolla, California 92093-0411, USA

<sup>d</sup>King Abdullah University of Science and Technology, Thuwal 23955-6900, Saudi Arabia

<sup>e</sup>Department of Mechanical and Aerospace Engineering, University of California, Irvine, Irvine, California 92697-2625, USA

© 2017 The Electrochemical Society. [DOI: 10.1149/2.0161703jss] All rights reserved. Published February 22, 2017. *This paper is part of the JSS Focus Issue on Thermoelectric Materials & Devices: Phonon Engineering, Advanced Materials and Thermal Transport.*

This focus issue addresses some of the cutting edge research themes in thermoelectric materials growth, phonon engineering to control thermal conductivity, new characterization methods, and advances in thermoelectric material applications. Controlling heat transport, dissipation, and its conversion to other forms of energy are major research drivers for both materials researchers and device/product specialists, and the pursuit of higher thermoelectric figures of merit can benefit from research on phonon transport physics, materials science, electronics, condensed matter physics, engineering, the chemistry of materials, and processing technology. Individual advances in these sub-fields can inspire developments in thermoelectrics that may underpin the next major advance in energy harvesting and cooling and ultimately improve the quality of our devices, and help drive energy efficiency and a greener society.

This issue and the symposia on “Thermoelectric and Thermal Interface Materials” held at ECS meetings provide a forum for high quality and cutting edge dissemination of research papers, critical review articles, and communications spanning the fundamental science of heat conduction, advances in thermoelectric and thermal interface materials, and their application to the development of heating, cooling, energy harvesting, and technology development for electronic, photonic, and related devices.

In this issue, readers will find extensive reviews on scientific and technical challenges in thermoelectric materials and devices, including advancements in organic thermoelectric materials, and micro- and nano-engineering approaches to next-generation thermoelectric generators. The issue also disseminates new computational screening methods for efficient selection of high performance thermoelectric materials, in addition to a survey of state-of-the-art characterization methods for electronic and phononic nanomaterials, critical to heat conduction measurements. Papers in this issue show recent developments in electrodeposition of materials for thermoelectric generators, advances in material science of semiconducting, and metallic materials engineered to enhance phonon scattering to improve thermoelectric performance, self-powdered temperature sensors, a strategy for integrated thermoelectric cooling for silicon photonics, and how molten semiconductors may be used for high temperature thermoelectrics. The issue comprehensively covers a range of important topics in advanced materials, methods, and applications of thermoelectrics.

We would like to express our sincere appreciation to the authors for their contributions to this focus issue, and to the reviewers for their critical and valuable comments that contributed to the high quality of the work by the authors in this issue. We would also like to thank the ECS editorial staff for their effort throughout the development and production of this issue from its inception to publication.

\*Electrochemical Society Member.

<sup>z</sup>E-mail: c.odwyer@ucc.ie