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## Introduction

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**Biographical notes:** Dale Henneke received his PhD degree from the University of Texas at Austin in 2001. He is an Assistant Professor in the Department of Chemical Engineering at the University of Waterloo and a member of the Waterloo Institute for Nanotechnology. He has published 19 peer-reviewed journal papers and 13 peer-reviewed proceedings. He has been recognised for his innovative work in nanomaterials syntheses through substantial funding by the Leaders Opportunity Fund from the Canadian Foundation for Innovation and the Deutsche Forschungsgemeinschaft (German Research Foundation).

Jin Zhang received her PhD degree from the National University of Singapore (NUS) in 2003. She is now an Assistant Professor of the Department of Chemical and Biochemical Engineering (CBE) at the University of Western Ontario (Western), and an Adjunct Professor of the Schulich School of Medicine and Dentistry at Western. She has published 27 peer-reviewed journal papers and 14 peer-reviewed proceedings. She has co-authored a book chapter with the publisher Kluwer. She was recently recognised as the Grand Challenges Canada-Canadian Rising Stars in Global Health for her research work on 'Non-invasive diagnostic tool for diabetes'.

Lyudmila Goncharova is an Assistant Professor in the Department of Physics and Astronomy of the University of Western Ontario. She is the Director of Tandetron Accelerator Facility, and an expert in surface physics and ion beam analysis. She was a holder of NSERC University Faculty Award (2007–2012), and Electronics Materials and Processing Division of American Vacuum

Society Postdoctoral Award (2005). Her research is in the broader area of metal oxide and alternative channel thin film structures, and semiconductor quantum dots (QD) prepared by as ion implantation, atomic layer deposition, or by molecular beam epitaxy.

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To address the huge impact of nanotechnology to healthcare and environmental-friendly products, the 2nd International Conference on Nanotechnology: Fundamentals and Applications (ICNFA2011) was successfully held in July 2011 in Ottawa, Canada. Over 420 papers were presented. The aim of this special issue is to highlight the most frontier research work on nanomaterials and nanotechnology presented at ICNFA2011.

The major theme of this special issue is to address the effects of nanomaterials and nanotechnology on green energy, medicine, and manufacture. Contributions are invited in the forms of *original research papers* to this special issue.

Specific topics for this special issue include, but are not limited to, the following research topics:

- synthesis and characterisation of new nanomaterials
- nanodevices: preparations, characterisations and applications
- nanobiotechnology: health, drug delivery, and tissue engineering
- nanotechnology and energy
- nanotechnology and environment.