



Edited by Dr. Noreen Sher Akbar and Dr. O. Anwar Bég, ISBN 978-953-51-2609-6, Print ISBN 978-953-51-2608-9, 300 pages, Publisher: InTech, Chapters published August 31, 2016 under CC BY 3.0 license

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Edited Volume

This book features state-of-the-art contributions in mathematical, experimental and numerical simulations in engineering sciences. The contributions in this book, which comprise twelve chapters, are organized in six sections spanning mechanical, aerospace, electrical, electronic, computer, materials, geotechnical and chemical engineering. Topics include metal micro-forming, compressible reactive flows, radio frequency circuits, barrier infrared detectors, fiber Bragg and long-period fiber gratings, semiconductor modelling, many-core architecture computers, laser processing of materials, alloy phase decomposition, nanofluids, geo-materials and rheo-kinetics. Contributors are from Europe, China, Mexico, Malaysia and Iran. The chapters feature many sophisticated approaches including Monte Carlo simulation, FLUENT and ABAQUS computational modelling, discrete element modelling and partitioned frequency-time methods. The book will be of interest to researchers and also consultants engaged in many areas of engineering simulation.

<http://www.intechopen.com/books/modeling-and-simulation-in-engineering-sciences>

- **Chapter 1 Numerical Simulation in Microforming for Very Small Metal Elements**by Krzysztof Mogielnicki

- **Chapter 2 Numerical Simulation of Compressible Reactive Flows**by Bing Wang, Zhao Xin Ren and Wei Wei
- **Chapter 3 Hybrid Time-Frequency Numerical Simulation of Electronic Radio Frequency Systems**by Jorge F. Oliveira
- **Chapter 4 HgCdTe Mid- and Long-Wave Barrier Infrared Detectors for Higher Operating Temperature Condition**by Malgorzata Kopytko and Piotr Martyniuk
- **Chapter 5 Numerical Simulation Methods Applied at Fiber Grating Sensors Design**by Dan Savastru, Sorin Miclos, Marina Tautan and Ion Lancranjan
- **Chapter 6 Charge Collection Physical Modeling for Soft Error Rate Computational Simulation in Digital Circuits**by Jean-Luc Autran, Daniela Munteanu, Soilhi Moindjie, Tarek Saad Saoud, Victor Malherbe, Gilles Gasiot, Sylvain Clerc and Philippe Roche
- **Chapter 7 Training Images-Based Stochastic Simulation on Many-Core Architectures**by Tao Huang and Detang Lu
- **Chapter 8 Numerical Simulation of Laser Processing Materials: An Engineering Approach**by Guillaume Savriama and Nadjib Semmar
- **Chapter 9 Mathematical Modeling for Nanofluids Simulation: A Review of the Latest Works**by Mohammad Reza Safaei, AminHossein Jahanbin, Ali Kianifar, Samira Gharehkhani, Akeel Shebeeb Kherbeet, Marjan Goodarzi and Mahidzal Dahari
- **Chapter 10 Application of Phase-Field Method to the Analysis of Phase Decomposition of Alloys**by Erika O. Avila-Davila, Victor M. Lopez-Hirata and Maribel L. Saucedo-Muñoz
- **Chapter 11 DEM Simulation Based on Experimental Testing**by Dr Šarūnas Skuodis
- **Chapter 12 Impact of Fluid Flow on Free Radical Polymerization in a Batch Reactor**by Gerardo M. Pineda-Torres, Cecilia Durán-Valencia, Fernando Barragán-Aroche and Simon López-Ramírez