

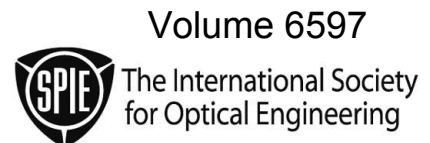
PROCEEDINGS OF SPIE

Nanodesign, Technology, and Computer Simulations

Alexander I. Melker
Teodor Breczko
Editors

19–25 June 2006
Olsztyn, Poland

Sponsored by
SPIE Poland Chapter
SPIE Russia Chapter



Proceedings of SPIE—The International Society for Optical Engineering, 9780819467331, v. 6597

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Author(s), "Title of Paper," in *Nanodesign, Technology, and Computer Simulations*, edited by Alexander I. Melker, Teodor Breczko, Proceedings of SPIE Vol. 6597 (SPIE, Bellingham, WA, 2007) Article CID Number.

ISSN 0277-786X
ISBN 9780819467331

Published by
SPIE—The International Society for Optical Engineering
P.O. Box 10, Bellingham, Washington 98227-0010 USA
Telephone 1 360/676-3290 (Pacific Time) · Fax 1 360/647-1445
<http://www.spie.org>

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Printed in the United States of America.

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Pagination: Proceedings of SPIE follow an e-First publication model, with papers published first online and then in print and on CD-ROM. Papers are published as they are submitted and meet publication criteria. A unique, consistent, permanent citation identifier (CID) number is assigned to each article at the time of the first publication. Utilization of CIDs allows articles to be fully citable as soon they are published online, and connects the same identifier to all online, print, and electronic versions of the publication.

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Introduction

The Tenth International Workshop on Nanodesign, Technology, and Computer Simulations, NDTCS-2006 took place 5-8 July 2006 in Olsztyn, Poland. Roughly 70 scientists and graduate students attended representing Belgium, Belarus, Czech Republic, Finland, France, Germany, Poland, Russia and Ukraine. The workshop incorporated a set of all-union specialized symposia that were established by St. Petersburg State Polytechnical University. The previous nine workshops took place in St. Petersburg, Russia, and had the name "Nondestructive Testing and Computer Simulations in Science and Engineering." These conferences have created strong base for the wide 'cross-links' between the different fields of science that allows consideration of important, common problems from different angles. However, the focus of investigations is tending to move with the passage of time gradually toward nanoscience and nanotechnology, this new active area of research. To support this tendency, it was decided to change the name, but to conserve the abbreviation which became a brand of those annual workshops. The current name, "International Workshop on Nanodesign, Technology, and Computer Simulations," reflects better the profile of the conference.

Since nanoscience and nanotechnology play active role in modern industry, the tenth workshop has focused on the quest for improved technology, specifically, progress in nanodesign and technology (NDT) and computer simulations (CSs). These two distinct areas now have much in common and make the quest for improved technology easier. Today, due to the great improvements in experimental and computational methods, it is possible to solve a variety of complex practical problems accurately and efficiently. The wide participation of scientists from Central and Eastern Europe provided useful insight into the beneficial ideas generated in the many geographically diverse scientific schools.

There were a total of 62 contributions to the workshop program that were organized into five oral/poster sessions:

1. Electronic and Atomic Dynamics
2. Molecular Dynamics
3. Laser, Optical, X-Ray and other Technologies
4. Nano, Micro, and Macro Mechanics
5. Computer Technologies and Visualization.

Papers at the workshop discussed these topics, with particular emphasis on the application of advanced theories, experimental techniques, and computational methods. The basic idea was to offer new approaches in many areas, from nano- to macro-scale science and technology. Invited tutorial lectures preceded the

special sessions at the plenary session. Forty-six papers were accepted for publication in these proceedings.

Session 1 deals mainly with theoretical aspects of interactions in atomic systems and is related to interactions between external fields, electrons, and phonons in solids and molecules.

Applications of computer simulations have continued to grow in the last few years and Session 2 has acted as a focus for major advances. Considerable advances have also been made in the solution of complex structural dynamics problems of materials science. The methods of computer simulations, especially molecular dynamics, are successfully used for their study. Laser, optical, x-ray and other techniques and measurements, are discussed in Session 3.

Much important research presented in Session 4 relates to structure and properties relations, especially mechanical properties. In addition, new experimental and theoretical methods, characterizing structure of real materials at the microscopic and the macroscopic level, are considered. This session also has a direct relationship to engineering applications.

Session 5 focuses on the problems of developing new algorithms of computer simulation for complex systems that permit an increased calculation rate. In addition, considerable attention is given to visualization. Practicing engineers, on the other hand, envisage the implementation of the computer techniques as an analysis and design tool.

The scientific exchange continued informally during a series of social events, which included a sightseeing tour July 5 to Olsztyn Castle, among which administrators was famous Nicolaus Copernicus, a party July 6 on the shore of Kortowo Lake in the park of the University of Warmia and Mazury, and a day excursion on July 8 to Malbork, a very beautiful and powerful castle of the Teutonic Knights, and to Gdansk, an ancient Hansestadt.

The next international workshop on Nanodesign, Technology, and Computer Simulations, NDTCS-2007 is planned for 17–21 September 2007, in Bayreuth, Germany.

The workshop web page can be found at:
<http://www.spbstu.ru/conference/ndtcs.html>.
<http://www.ep1.uni-bayreuth.de>

Alexander I. Melker
Teodor Breczko

Related Publications

Modelling and Computer Simulation in Materials Science and Engineering, Vol. 6, No. 4 (1998).

International Workshop on New Approaches to High-Tech Materials: Nondestructive Testing and Computer Simulations in Materials Science and Engineering, Alexander I. Melker, Editor, Proceedings of SPIE, Vol. 3345 (1998)

International Workshop on Nondestructive Testing and Computer Simulations in Science and Engineering, Alexander I. Melker, Editor, Proceedings of SPIE, Vol. 3687 (1999)

Third International Workshop on Nondestructive Testing and Computer Simulations in Science and Engineering, Alexander I. Melker, Editor, Proceedings of SPIE Vol. 4064 (2000)

Fourth International Workshop on Nondestructive Testing and Computer Simulations in Science and Engineering, Alexander I. Melker, Editor, Proceedings of SPIE Vol. 4348 (2001)

Fifth International Workshop on Nondestructive Testing and Computer Simulations in Science and Engineering, Alexander I. Melker, Editor, Proceedings of SPIE Vol. 4627 (2002)

Sixth International Workshop on Nondestructive Testing and Computer Simulations in Science and Engineering, Alexander I. Melker, Editor, Proceedings of SPIE Vol. 5127 (2003)

Seventh International Workshop on Nondestructive Testing and Computer Simulations in Science and Engineering, Alexander I. Melker, Editor, Proceedings of SPIE Vol. 5400 (2004)

Eighth International Workshop on Nondestructive Testing and Computer Simulations in Science and Engineering, Alexander I. Melker, Editor, Proceedings of SPIE Vol. 5831 (2005)

Ninth International Workshop on Nondestructive Testing and Computer Simulations, Alexander I. Melker, Editor, Proceedings of SPIE Vol. 6253 (2006)

