

10th International Young Scientist conference

**Developments in Optics and  
Communications 2014**

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**Laserlab III Training School for  
Potential Users**

Laser Applications in Spectroscopy, Industry and  
Medicine

Book of Abstracts

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**ISBN: 978-9934-517-32-1**

**e-ISBN: 978-9934-517-35-8**

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*Cover design:* M. Bruvelis, A. Cinins, Riga

*Typesetting and Production:* M. Bruvelis X<sub>Y</sub>-L<sup>A</sup>T<sub>E</sub>X publishing services, Riga

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# Investigation of graphene oxide monolayers and films obtained by Langmuir - Blodgett technique

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Single-sheet graphene (SG) is an innovative, outstanding transparent material with high electrical and thermal conduction. Enhanced performance of optoelectronic devices could be achieved replacing traditional transparent electrodes with SG. Large area substrates covered with SG could be used for future applications like solid state lightning and solar cells.

In this study single-sheet graphene oxide (SGO), the promising precursor for the bulk production of graphene-based materials, has been investigated. SGO was obtained by modified Hummer's method (chemical oxidation, exfoliation) followed by SGO - water gel lyophilization.

In order to transfer SGO from suspension to substrate in controlled manner Langmuir - Blodgett technique has been chosen, deposition parameters and conditions have been optimized. To avoid loss of material in water subphase benzene and benzene/methanol mixtures were chosen as suspension and spreading solvents. SGO sheet size was regulated by sonication in ultrasound bath and low and high speed centrifugation. Deposition was carried out at a variety of pressures. The deposition on variously treated (hydrophilization, ozonation etc.) glass substrates was studied. Obtained SGO thin films were characterized by scanning electron microscopy. The work to improve the quality of deposited SGO layers is continued.

This work has been supported by National Research Program Nr. 2. "Development of Innovative Multifunctional Materials, Signal Processing and Information Technologies for Competitive Science Intensive Products", Project Nr. 6. "Graphene, modified graphene and graphene containing composites for surface coatings, nanodevices, sensors and energy conversion".