

OLGA V. ELYUKHINA

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CURRENT OCCUPATION:

Ph.D. student (second year) and Research Assistant Ioffe Physico-Technical Institute
Politechnicheskaya ul. 26
Saint-Petersburg
194021 Russia

PROFESSIONAL EXPERIENCE AND ACHIEVEMENTS:

Ioffe Physico-Technical Institute, Saint-Petersburg, Russia, Research Assistant

2003-2005:

- Studied and made theoretical predictions regarding the effect of co-dopant self-assembling in II-VI and III-V material systems.
- Found that under certain growth conditions in several III-V and II-VI compounds, impurity atoms of one type have a tendency to gather around impurity atoms of another type. As a result, nanoobjects are formed instead of uniformly distributed dopants.
- Proposed that this effect of co-dopant self-assembling can be used for engineering of material with new properties including band-gap engineering.

2001-2003:

- Adapted the Cluster Variation Method (previously used for ferromagnetics and colloids) for application in the study of the thermodynamic properties of ternary and quaternary semiconductor alloys and their thin layers.
- Successfully applied this method in the study of the nature of inhomogeneity of cubic InGaN alloys.
- Demonstrated that strong clustering in a one-phase alloy (instead of spinodal decomposition) is responsible for the experimentally observed inhomogeneity of thin cubic InGaN epitaxial layers.

Proposed that this technique can be used to simulate the atom arrangement depending on growth conditions and, therefore, optimize growth conditions in InGaN/GaN material system, grown by various techniques including MBE and MOCVD, which has a tremendous potential for opto- and microelectronic applications.

2004:

- Scientific secretary for NGCM2004 Editorial Board

2005-:

- Scientific secretary for NGC2007 Programming Committee

EDUCATION:

- M.S. with Honors (Great Point Average of 5.0/5.0) in Applied Physics of Solid State, Saint-Petersburg State Polytechnical University, Saint-Petersburg, Russia
- B.S. with Honors (Great Point Average of 5.0/5.0) in Technical Physics, Saint-Petersburg State Polytechnical University, Saint-Petersburg, Russia
- **Languages:** Russian (mother language), English (fluent), Spanish (basic knowledge)

AWARDS:

1999 – George Soros student Grant

2004 – Best Poster Award at Nano and Giga Challenges in Microelectronics, September 13-17, 2004, Cracow, Poland

PUBLICATIONS:

1. V.A. Elyukhin, O.V. Elyukhina, "Self-assembling of Mg and O isoelectronic impurities in ZnS", JAP (2006) (in print)

2. V.A. Elyukhin, V.M.Sanchez-R., O.V.Elyukhina, "Self-assembling in $Al_xGa_{1-x}N_yAs_{1-y}$ alloys", Appl. Phys. Lett., 85, pp. 1704-1706 (2004)

3. O.V.Elyukhina, "The Cluster Variation Method for Semiconductor Alloys", paper presented at 29th Symp. Compound Semiconductors, Lausanne, Switzerland, 7-10 October, 2002, Inst. Phys. Conf. Ser. No. 174, pp. 93-96 (2003)

4. O.V.Elyukhina, O. S. Vasyutinskii, J. A. Beswick, "Analyzing high order terms in the angular distribution of photofragments by the ion imaging method", Optics and Spectroscopy 94, pp.369-373 (2003)

CONFERENCES:

1. O.V.Elyukhina, "The Cluster Variation Method for Semiconductor Alloys", 29th Symposium on Compound Semiconductors, 7-10 October, 2002, Lausanne, Switzerland

2. O.V.Elyukhina, V.A.Elyukhin, V. M. Sanchez-R., "Nano self-assembling in $Al_xGa_{1-x}N_yAs_{1-y}$ alloys", Nano and Giga Challenges in Microelectronics, September 13-17, 2004, Cracow, Poland

3. V.A.Elyukhin, O.V.Elyukhina, "Self-assembling of Mg and O in ZnS", The Fifth International Conference on Low Dimensional Systems and Devices December 12-17, 2004, Cancun, Mexico