
Denis Vasyukov

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PERSONAL

Date of Birth: August 03, 1977

Citizenship: Russian

Languages: English – fluent, Russian – native speaker, German – basic knowledge

Professional Bodies Membership: IoP associate member

EDUCATION

Oct. 2005 – present

PhD student at School of Physics, University of Exeter, Exeter, UK

Thesis: Optically Induced Anomalous Hall Effect in 2D hole gases

Research supervisor: Dr. Annette S. Plaut

- To find experimental evidence for the theoretically predicted photo-induced anomalous Hall effect in zinc-blende semiconductors and to characterize its behaviour.

Awarded an ORSAS scholarship by Universities of UK

Sep. 1999 – Jul. 2001

Masters Degree in Physics, St.Petersburg State Technical University, Physical and Technical Faculty, St.Petersburg, Russia

Thesis: Structural Investigation of Isovalent Doped GaAs Grown at Low Temperature.

Research supervisor: Prof. Semen G. Konnikov (the head of the laboratory of material characterization)

The work has been undertaken in the Ioffe Physico-Technical Institute of the Russian Academy of Science, in the laboratory of characterization of materials and solid state electronics structures.

The Ioffe Institute is the largest semiconductor physics R&D institution in Russia and is the Alma Mater for many leading specialists in the field, including its former Head

Prof. Zhores I. Alferov a Nobel Prize winner in Physics in 2000 (for his contribution in the development of semiconductor heterostructures and lasers).

- To find out the structural properties of nonstoichiometric III-V semiconductors using X-ray diffraction and transmission electron microscopy techniques.
- Theoretically to explain and simulate obtained experimental results using mathematical software.

Study included: The physics of semiconductor devices with the main focus on optoelectronics devices and device and semiconductor materials characterization.

Awarded: A.F. Ioffe Young Scientist scholarship,
International Union of Crystallography Young Scientist Award

Sep. 1994 – Jul. 1999

Bachelors Degree in Physics, St.Petersburg State Technical University, Physical and Technical Faculty. (St.Petersburg, Russia)

Thesis: Determination of growth parameters and crystalline quality of quaternary solid solutions using high-resolution X-ray diffractometry.

Research supervisor: Dr. Marina V. Baidakova

This work was also undertaken in the Ioffe Physico-Technical Institute of the Russian Academy of Science, in the laboratory of characterization of materials and solid state electronics structures.

- To find out how the growth temperature and the liquid phase elements ratio influence the structural properties of ternary III-V semiconductors using X-ray diffraction photoluminescence techniques.

Study included: Physical and mathematical sciences, electrical engineering, programming and technical drawing.

PROFESSIONAL EXPERIENCE

Oct. 2005 – present *Laboratory demonstrator*, School of Physics, University of Exeter, Exeter, UK

Duties: Supervision of students doing laboratory experiments or problems classes and marking their works. Measurement automation (LabView software writing), research, experimental measurements (magneto-transport, optical and combined).

Jun. 2006 *research adviser*, Nano System Functionality Centre (Nano Quantum Electronics Group), National Institute of Material Science, Tsukuba, Japan

Duties: Creation of measurement automation software, using LabView, and a small part of the electronic equipment.

Aug. 2004 – Sep. 2005, *device characterization engineer*, "Epi-center" Ltd., St.Petersburg, Russia

Work essentials: LED structures characterization.

Duties: Creation of quick-test measurement laboratory for blue (nitrides based) LED structure and electronic properties characterization (X-ray diffraction, photo- and electro-luminescence, ellipsometry, I-V measurements). Measurement data processing software writing (LabView, C#). Routine measurements. Equipment maintenance.

Jan. 2002 – May 2004, *invited researcher*, Physikalishes Institut III, Universitaet Erlangen-Nuernberg, Erlangen, Germany

Research topic: Microwave properties of stacked intrinsic Josephson junctions.

Duties: Submicron size sample preparation (photo + e-beam lithography, material deposition techniques, various types of etching, bonding), experimental setup design and partial fabrication (3D-moving stage for the cryostat probe and microwave lens design), experiment measurement and control software writing (LabView and C++), equipment maintenance.

May 1999 – Dec. 2001, *senior laboratory assistant*, Ioffe Institute of the Russian Academy of Sciences, St. Petersburg, Russia

Research topic: X-ray diffraction measurements of semiconductor heterostructures.

Duties: X-ray diffraction measurements of crystal samples, calculations to define crystal parameters, equipment maintenance.

PUBLICATIONS

- “The circular photogalvanic effect in two-dimensional hole gases in magnetic field” D.A. Vasyukov, A.S. Plaut, A.H. MacDonald, M. Henini, *in preparation*
- “Photo-induced anomalous Hall effect in 2-dimensional hole gases” D.A. Vasyukov, A.S. Plaut, A.H. MacDonald, M. Henini, L.N. Pfeiffer, K.W. West, *in preparation*
- "Thermal fluctuations in ultrasmall intrinsic Josephson junctions" A.Franz, Y.Koval, D.Vasyukov, P.Mueller, H.Schneidewind, D.A.Ryndyk and J.Keller, C.Helm, Phys. Rev. B 69, Art. No. 014506 (2004)
- "Intrinsic Josephson junctions: integrated circuits and possible applications" Huabing Wang, Jian Chen, Peiheng Wu, Tsutomu Yamashita, Denis Vasyukov and Paul Mueller, Supercond. Sci. Technol. 16 (2003) 1375-1379
- "The role of lead in growing GaInAsSb solid solutions by LPE", T.I.Voronina, T.S.Lagunova, E.V.Kunitsyna, Ya.A.Parkhomenko, D.A.Vasukov, Yu.P.Yakovlev, Semiconductors 35 (8) (2001) pp. 904-911
- "Structural transformations in low-temperature grown GaAs:Sb", D.A.Vasyukov, M.V.Baidakova, V.V.Chaldyshev, A.A.Suvorova, V.V.Preobrazhenskii, M.A.Putyato and B.R.Semyagin, J.Phys.D:Appl.Phys. 34 (2001) A15-A18.

PRESENTATIONS

- “The circular photogalvanic effect in two-dimensional hole gases in magnetic field” D.A. Vasyukov, A.S. Plaut, A.H. MacDonald, M. Henini, (HMF18, 2008, Brazil)
- “Photo-induced anomalous Hall effect in 2-dimensional hole gases” D.A. Vasyukov, A.S. Plaut, A.H. MacDonald, M. Henini, L.N. Pfeiffer, K.W. West, (ICPS 2008, Brazil)

- "Microwave absorption of BSCCO based intrinsic Josephson junctions", D.A.Vasyukov, H.B.Wang, V.Dremov, Y.Koval, P.Mueller (Cryo'03 Kryoelektronische Bauelemente 2003, Heinrich - Fabri - Institut, Blaubeuren, Germany, 5-7.10.2003)
- "Hydrogenation of GaAs films at low temperature", V.V.Chaldyshev, A.E.Kunitsyn, D.A.Vasyukov, V.A.Kagadei, D.I.Proskurovsky, V.V.Preobrazhenskii, M.A. Putyato, and B.R. Semyagin (3rd Symposium on Non Stochiometric III-V-Compounds 2001, Germany)
- "Epitaxial growth of heterostructures based on InAsPSb and GaInAsPSb isoperiodical with GaSb", V.I.Vasil'ev, V.I.Kuchinskii, I.P.Nikitina, D.Akhmedov, V.M.Smirnov, D.A.Vasyukov (ISCS 2000, Hyatt Monterey, Monterey, CA, USA)
- "Structural Transformations in Low-Temperature-Grown GaAs," D.A.Vasyukov, M.V.Baidakova, V.V.Chaldyshev, A.A.Suvorova, V.V.Preobrazhenskii, M.A.Putyato, B.R.Semyagin (XTOP2000, Poland)
- "HRXRD and TEM Studies of delta-InAs and As-Cluster Superlattices in GaAs Grown at Low Temperature," D.A.Vasyukov, V.V.Chaldyshev, A.A.Suvorova, V.V.Preobrazhenskii, M.A.Putyato, B.R.Semyagin, N.N.Faleev (XTOP2000, Poland)
- "Influence of Antimony Doping on Structural Transformations in Low-Temperature-Grown GaAs upon Annealing," D.A.Vasyukov, V.V.Chaldyshev, A.A.Suvorova, V.V.Preobrazhenskii, M.A.Putyato, B.R.Semyagin (CAC2000, Poland)
- "High-Resolution X-ray Diffraction Study of Coincided delta-InAs and As-Cluster Superlattices in GaAs Films Grown by Molecular Beam Epitaxy at Low Temperature," D.A.Vasyukov, V.V.Chaldyshev, N.N.Faleev, A.A.Suvorova, V.V.Preobrazhenskii, M.A.Putyato, B.R.Semyagin (CAC2000, Poland)