

OLEKSANDR ISAIENKO

Scientist

February 2016 – current
IPG Photonics, Silicon Valley Technology Center
San Jose, CA, USA

Post-Doctoral Researcher

January 2014 – February 2016
Los Alamos National Laboratory
Los Alamos, NM, USA

Laser Scientist

April 2011 – January 2014
Continuum/Quantronix (GSI Group subsidiaries at the time),
Santa Clara, CA, USA

Graduate Research/Teaching Assistant

2005-2011
Temple University, Chemistry Department, Philadelphia, PA, USA

Visiting Student (under DAAD scholarship)

Fall 2009
Institute of Physical and Theoretical Chemistry, **University of Bonn**, Germany

High-School Chemistry Olympiad Instructor (Adjunct Chemistry teacher)

2001-2005
Ukrainian Physics and Mathematics Lyceum, National Taras Shevchenko University, Kyiv, Ukraine

EDUCATION:

Ph.D. (2011)

Chemistry Department, Temple University, Philadelphia, Pennsylvania, USA
Thesis title: “*Development of Ultra-broadband Ultrafast Infrared Sources and Applications to Nonlinear Vibrational Spectroscopy of Interfaces*”; Academic advisor: Professor Eric Borguet

M.Sc., B.Sc. (2005, 2004)

Chemistry Department, Taras Shevchenko University of Kyiv, Kyiv, Ukraine

PEER REVIEW SERVICES:

Optics Letters; Optics Express; Journal of the Optical Society of America B; Optical Materials Express; Applied Optics (publications of the Optical Society of America); **Applied Physics B: Lasers and Optics** (Springer); **Scientific Reports** (Nature Publishing Group)

LinkedIn Profile:

www.linkedin.com/in/oleksisaienko

PROFESSIONAL ADDENDUM

AWARDS, HONORS AND SCHOLARSHIPS:

- Daniel Swern Award for Excellence in Research, Chemistry Department, Temple University (July 2010);
- Scholarship from German Academic Exchange Service, DAAD (award # A/08/79504) to carry out research at the University of Bonn, Germany (Fall 2009);
- Outstanding Graduate Research Award from the College of Science and Technology, Temple University (October 2008);
- Ultrafast Phenomena 2008 Graduate Student Travel Award sponsored by Coherent, Inc (June 2008);
- Theodore Ovcharenko award for excellent study at the Chemistry Department, Taras Shevchenko University of Kiev (2004, Kiev, Ukraine);
- 1st and 2nd place awards for presentations at the Ukrainian Meetings of Students (“Modern Problems of Chemistry”, 2002-2004, Kiev, Ukraine);
- Medal of the President of Ukraine “For Labour and Prowess” (October 2003) for training the silver and bronze medallists of the 35th International Chemistry Olympiad in Athens, Greece, July 5–14, 2003;
- Award of the Cabinet of Ministers of Ukraine (October 2002) for training the silver medallist of the 34th International Chemistry Olympiad in Groningen, The Netherlands, July 5–14, 2002.

PEER-REVIEWED PUBLICATIONS:

1. Phase-Transfer Ligand Exchange of Lead Chalcogenide Quantum Dots for Direct Deposition of Thick, Highly Conductive Films, Qianglu Lin, Hyeong Jin Yun, Wenyong Liu, Hyung-Jun Song, Nikolay S. Makarov, Oleksandr Isaienko, Tom Nakotte, Gen Chen, Hongmei Luo, Victor I. Klimov, and Jeffrey M. Pietryga, *Journal of the American Chemical Society* 2017 139 (19), 6644-6653
DOI: 10.1021/jacs.7b01327
2. Phonon-assisted nonlinear optical processes in ultrashort-pulse pumped optical parametric amplifiers, Oleksandr Isaienko and István Robel, *Scientific Reports* 6, 23031 (2016)
DOI: 10.1038/srep23031
3. Spectral and Dynamical Properties of Single Excitons, Biexcitons, and Trions in Cesium–Lead-Halide Perovskite Quantum Dots, Nikolay S. Makarov, Shaojun Guo, Oleksandr Isaienko, Wenyong Liu, István Robel and Victor I. Klimov, *Nano Letters* 16 (4) 2349-2362 (2016)
DOI: 10.1021/acs.nanolett.5b05077
4. Generation of sub-30 fs microjoule mid-infrared pulses for ultrafast vibrational dynamics at solid/liquid interfaces, Aziz Boulesbaa, Oleksandr Isaienko, Aashish Tuladhar and Eric Borguet, *Optics Letters* 38 (23), 5008-5011 (2013)
DOI: 10.1364/OL.38.005008
5. Hydrophobicity of hydroxylated amorphous fused silica surfaces, Oleksandr Isaienko and Eric Borguet, *Langmuir* **29** (25), 7885-7895 (2013)
DOI: 10.1021/la401259r
6. Ultra-broadband few-cycle infrared pulse generation from non-collinear optical parametric amplifier based on bulk niobate crystals, Oleksandr Isaienko and Eric Borguet, *Journal of the Optical Society of America B* **30** (8), 2075-2080 (2013)
DOI: 10.1364/JOSAB.30.002075

7. Observation of the bending mode of interfacial water at silica surfaces by near infrared vibrational sum-frequency generation spectroscopy of the [stretch+bind] combination bands, Oleksandr Isaienko, Satoshi Nihonyanagi, Devika Sil and Eric Borguet, *Journal of Physical Chemistry Letters* **4**, 531-535 (2013)
DOI: 10.1021/jz3015088
8. Ultra-broadband sum-frequency vibrational spectrometer of aqueous interfaces based on a non-collinear optical parametric amplifier, Oleksandr Isaienko and Eric Borguet, *Optics Express* **20**(1), 547-561 (2012)
DOI: 10.1364/OE.20.000547
9. High repetition rate near-IR non-collinear ultrabroadband optical parametric amplification in KTiOPO_4 , Oleksandr Isaienko, Eric Borguet and Peter Vöhringer, *Optics Letters* **35**(22), 3832-3834 (2010)
DOI: 10.1364/OL.35.003832
10. Non-collinear optical parametric amplification of near-IR pulses in KTiOPO_4 at a high repetition rate, Oleksandr Isaienko, Eric Borguet and Peter Vöhringer, in *Ultrafast Phenomena XVII*: ed. M. Chergui, et al, 2010, Oxford University Press, New York. pp. 709-711
11. Ultra-broadband infrared pulses from a potassium-titanyl phosphate optical parametric amplifier for Vis-IR-SFG spectroscopy, Oleksandr Isaienko and Eric Borguet, in *Ultrafast Phenomena XVI*, Springer Series in Chemical Physics, 2009, **92** (Part 9), pp. 777-779
DOI: 10.1007/978-3-540-95946-5_252
12. Pulse-front matching of ultrabroadband near-infrared non-collinear optical parametric amplified pulses, Oleksandr Isaienko and Eric Borguet, *Journal of the Optical Society of America B* **26**(5), 965-972 (2009)
DOI: 10.1364/JOSAB.26.000965
13. Generation of ultra-broadband pulses in the near-IR by non-collinear optical parametric amplification in potassium titanyl phosphate, Oleksandr Isaienko and Eric Borguet, *Optics Express* **16** (6), 3949-3954 (2008)
DOI: 10.1364/OE.16.003949
14. Determination of the Sensitive Layer Temperature of the Adsorption-Semiconductor Gas Sensor, Oleksandr Isaienko, Nelli Maksymovych and Vitaliy Yatsimirsky; *Sensors and Actuators B Chemical*, **108** 134-142 (2005)
DOI: 10.1016/j.snb.2004.12.081

PATENT:

Methods and Devices for Generation of Broadband Pulsed Radiation, Eric Borguet and Oleksandr Isaienko;
US Patent 8441720 (granted May 14, 2013).
International Application No.:PCT/US2009/035434 (WO2009108844)
US Patent Application 20100321767 (publication date 12/23/2010)

INVITED TALKS:

“Development of Novel Ultra-Broadband IR Laser Sources” December 2009
Institute for Atomic and Molecular Physics (AMOLF), Amsterdam, The Netherlands

“Infrared Ultrabroadband Ultrafast Laser Sources” October 2013
Temple University, Department of Chemistry, Philadelphia, PA USA

CONFERENCE PRESENTATIONS:

1. Talk: “*Influence of Intrinsic Phonon Modes in Nonlinear Optical Crystals on the Performance of Ultrafast Frequency Conversion Devices*”, Oleksandr Isaienko and István Robel; 2016 Conference on Lasers and Electro-Optics (CLEO-2016), June 5-10, 2016, San Jose, California, USA
2. Talk: “*Band-Edge Exciton States and Intrinsic Radiative Lifetimes in Infrared Emitting IV-VI and III-V Quantum Dots*”, Oleksandr Isaienko, Kirill Velizhanin, Qianglu Lin, Wenyong Liu, Gen Chen, Jeffrey M. Pietryga, István Robel and Victor I. Klimov; 2015 MRS Fall Meeting; Symposium O – Plasmonic Nanomaterials for Energy Conversion; November 29 – December 4, 2015, Boston, Massachusetts, USA
3. Talk: “*Linear and Nonlinear Optical Properties of Perovskite Quantum Dots Evaluated at the Single-Particle and Ensemble Level*”, Nikolay Makarov, Shaojun Guo, Young-Shin Park, Oleksandr Isaienko, Jeffrey M. Pietryga, Istvan Robel and Victor I. Klimov; 2015 MRS Fall Meeting; Symposium OO – Nanomaterials-based Solar Energy Conversion; November 29 – December 4, 2015, Boston, Massachusetts, USA
4. Talk: “*Deviation From [Pump=Signal + Idler] Photon Energy Conservation in an Ultrafast Optical Parametric Amplifier*”, Oleksandr Isaienko and Victor Klimov; 2015 Conference on Lasers and Electro-Optics (CLEO), May 11-15, 2015, San Jose, California, USA
5. Poster “*Intrinsic radiative lifetimes of infrared quantum dots determined by gated photoluminescence frequency upconversion*”, Oleksandr Isaienko, Qianglu Lin, Gen Chen, Wenyong Liu, Jeffrey Pietryga, Istvan Robel and Victor Klimov; 20 Years of Quantum Dots at Los Alamos Conference, April 13-16, 2015, Santa Fe, New Mexico, USA.
6. Poster “*Direct determination of radiative lifetimes of infrared-emitting quantum dots by means of ultrafast gated fluorescence frequency upconversion*”, Oleksandr Isaienko, Qianglu Lin, Gen Chen, Wenyong Liu, Jeffrey Pietryga, Istvan Robel and Victor Klimov; Gordon Research Conference “Nanomaterials for Applications in Energy Technology”, February 22-27, 2015, Ventura, California, USA.
7. Talk “*Sum-frequency generation spectroscopy of the combination band vibrations of water molecules at silica surfaces*”, Oleksandr Isaienko, Satoshi Nihonyanagi, Devika Sil and Eric Borguet; 244th ACS National Meeting and Exposition, August 19-23, 2012, Philadelphia, Pennsylvania, USA
8. Talk “*Sum-frequency vibrational spectroscopy of amorphous silica surfaces in presence of water molecules adsorbing from the vapor phase*”, Oleksandr Isaienko and Eric Borguet; 244th ACS National Meeting and Exposition, August 19-23, 2012, Philadelphia, Pennsylvania, USA
9. Talk “*Broadband sum-frequency generation spectroscopy of high-frequency vibrations of water molecules at silica surfaces*”, Oleksandr Isaienko, Satoshi Nihonyanagi, Devika Sil and Eric Borguet; The 67th OSU International Symposium on Molecular Spectroscopy, June 18-22, 2012, Ohio State University, Columbus, Ohio, USA
10. Poster “*Generation of sub-50-fs pulses in the near infrared by optical parametric amplifiers based on BiBO crystals*”, Pancho Tzankov, Oleksandr Isaienko, Igor Shumay, David Stockwell, Lin Xu, Nicolas Moisan, and Davide Boschetto; 2012 Conference on Lasers and Electro-Optics (CLEO) and Quantum Electronics and Laser Science (QELS) conference, May 6-11, 2012, San Jose, California, USA
11. Poster “*Ultra-broadband sum-frequency generation spectroscopy of silica – water interfaces*”, Oleksandr Isaienko and Eric Borguet; 2010 Gordon Research Conference on Vibrational Spectroscopy, August 1-6, 2010, University of New England, Biddeford, Maine, USA
12. Poster “*Non-Collinear Optical Parametric Amplification of Near-IR pulses in KTiOPO₄ at a High Repetition Rate*”, Oleksandr Isaienko, Eric Borguet and Peter Vöhringer; 17th International Conference on Ultrafast Phenomena (UP), July 18-23, 2010, Snowmass Village, Colorado, USA

13. Talk “Near-Infrared Pulse-Front Matched Non-collinear Optical Parametric Amplification in Bulk KTP”, Oleksandr Isaienko and Eric Borguet, 2009 Conference on Lasers and Electro-Optics (CLEO-2009), May 31 – June 5, 2009, Baltimore, Maryland, USA
14. Talk “Ultra-Broadband Near-IR Non-collinear Optical Parametric Amplification in Potassium Niobate and Lithium Niobate”, Oleksandr Isaienko and Eric Borguet, 2009 Conference on Lasers and Electro-Optics (CLEO-2009), May 31 – June 5, 2009, Baltimore, Maryland, USA
15. Talk “Ultra-Broadband Vibrational Sum-Frequency Spectroscopy of Hydroxyl Overtones at Mineral/Aqueous Interfaces”, Oleksandr Isaienko and Eric Borguet, 237th ACS National Meeting, March 22-26, 2009, Salt Lake City, Utah, USA
16. Poster “Ultra-Broadband Infrared Pulses from a Potassium-Titanyl Phosphate Optical Parametric Amplifier for VIS-IR-SFG Spectroscopy”, Oleksandr Isaienko and Eric Borguet, XVI International Conference on Ultrafast Phenomena (UP 2008), June 9-13, 2008, Stresa (Lago Maggiore), Italy
17. Talk “Near-Infrared Non-Collinear Optical Parametric Amplification in Bulk Potassium-Titanyl Phosphate with $>2500\text{ cm}^{-1}$ Bandwidth”, Oleksandr Isaienko and Eric Borguet, 2008 Conference on Lasers and Electro-Optics (CLEO-2008), May 4-9, 2008, San Jose, California, USA
18. Poster “Production of Infrared Pulses for Ultra-broadband Sum-Frequency Generation Spectroscopy of Interfaces”, O. Isaienko, S. Nihonyanagi, E. Borguet; 8th Annual Graduate Student Poster Session, The Philadelphia Section of the American Chemical Society; January 24, 2008, Temple University, Philadelphia, Pennsylvania, USA
19. Talk “Broadband Optical Parametric Amplifiers: Tool for Ultrafast Non-Linear Optical Studies”, O. Isaienko, E. Borguet; 2nd Annual Chautauqua on Nonlinear Optics, May 28-31, 2007, Purdue University, West Lafayette, Indiana, USA
20. Poster “Determination of the Sensitive Layer Temperature of the Adsorption-Semiconductor Gas Sensor”, O. Isaienko, N. Maksymovych, V. Yatsimirsky; 10th International Meeting on Chemical Sensors, July 11-14, 2004, Tsukuba, Japan
21. Presentations at the 3rd, 4th and 5th Ukrainian Meetings of Students “Modern Problems of Science”, 2002-2004, Kiev, Ukraine

PAPERS IN CONFERENCE DIGESTS AND PROCEEDINGS:

1. “Influence of Intrinsic Phonon Modes in Nonlinear Optical Crystals on the Performance of Ultrafast Frequency Conversion Devices”, Oleksandr Isaienko and István Robel, in CLEO: Science and Innovations 2016 (Optical Society of America, 2016), paper SW1Q.6
2. “Deviation From [Pump=Signal + Idler] Photon Energy Conservation in an Ultrafast Optical Parametric Amplifier”, Oleksandr Isaienko and Victor Klimov, in CLEO: Science and Innovations 2015 (Optical Society of America, 2015), paper SF2M.6
3. “Generation of sub-50-fs pulses in the near infrared by optical parametric amplifiers based on BiBO crystals”, Pancho Tzankov, Oleksandr Isaienko, Igor Shumay, David Stockwell, Lin Xu, Nicolas Moisan, and Davide Boschetto; in 2012 Conference on Lasers and Electro-Optics (CLEO) and Quantum Electronics and Laser Science (QELS) conference (Optical Society of America, 2012), paper JTh2A.25
4. “Non-Collinear Optical Parametric Amplification of Near-IR Pulses in KTiOPO_4 at a High Repetition Rate”, Oleksandr Isaienko, Eric Borguet and Peter Voehringer, Ultrafast Phenomena XVII (Optical Society of America, 2010), paper ME23
5. “Near-Infrared Pulse-Front Matched Non-Collinear Optical Parametric Amplification in Bulk KTP” O. Isaienko and E. Borguet, in Conference on Lasers and Electro-Optics/International Quantum Electronics Conference, OSA Technical Digest (CD) (Optical Society of America, 2009), paper CFC3.

6. "Ultra-Broadband near-IR Non-Collinear Optical Parametric Amplification in Potassium Niobate and Lithium Niobate" O. Isaienko and E. Borguet, in *Conference on Lasers and Electro-Optics/International Quantum Electronics Conference*, OSA Technical Digest (CD) (Optical Society of America, 2009), paper CFC7.
7. "Near-Infrared Non-Collinear Optical Parametric Amplification in Bulk Potassium-Titanyl Phosphate with $>2500\text{ cm}^{-1}$ Bandwidth", Oleksandr Isaienko and Eric Borguet, Proceedings of the 2008 Conference on Lasers and Electro-Optics (May 4-9, 2008, San Jose, California, USA), paper CTuEE3
8. "Determination of the Sensitive Layer Temperature of the Adsorption-Semiconductor Gas Sensor", O. Isaienko, N. Maksymovych, V. Yatsimirsky, Technical Digest of the 10th International Meeting on Chemical Sensors (2004, Tsukuba, Japan), 418-419
9. Contributions in the Proceedings of 3rd (May 2002), 4th (May 2003) and 5th (May 2004) Ukrainian Meetings of Students "Modern Problems of Science", Kiev (in Ukrainian)