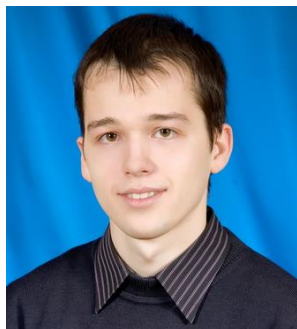


Curriculum Vitae (last update - June 2019)

Name: Alexander A. Guda
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Current position:

- 1) Senior lecturer at Southern Federal University, Rostov-on-Don, Russia.
- 2) Head of the laboratory of nanodiagnostics at Smart Materials Research Institute, Southern Federal University, Rostov-on-Don-Russia

Education:

- Bachelor degree (2008), Master degree (2010): Theoretical physics, Faculty of Physics, Southern Federal University, Rostov-on-Don, Russia;

- PhD degree (2013): Solid state physics, Faculty of Physics, Southern federal university. PhD thesis title "Dopants in the nanosized semiconductors ZnO, AlN, InN: X-ray diagnostics and computer modelling".

2010-2011 - traineeship in the group of prof. W.Wurth, DESY, Hamburg "16-pole Radiofrequency Ion Trap for Spectroscopic Investigations of Physical Properties and Chemical Reactivity of Charged Nanoclusters in the Gas Phase"

Research interests:

- time-dependent fast structural changes in 3d metal complexes after laser pump pulse irradiation. Methods: time-resolved XANES, multidimensional structural fit for XANES, transient XANES of photo-activated molecules.

- phase transformations in materials for Li-ion batteries upon charge/discharge processes. Methods: in-situ XANES, XRD, ab-initio simulations for XANES.

- time-dependent structural changes in CeO₂ and Pd nanoparticles during catalytic reactions. Methods applied: EXAFS, XANES, HERFD-XAS, theoretical simulations of XAS, DFT theoretical simulations of electronic and structural properties for PdH_x and CeO_{2-x}

Publication activity

72 publications in peer-reviewed journals, total citations 607, *h*-index = 14 (Scopus, April 2019).

Personal grants

1. Grant of President of Russia for young scientists MK-7300.2016.2. Development and implementation of the laboratory setup for precise analysis of the oxidation state of 3d metals during cycling of the Li-ion batteries (2016-2017)
2. Grant of President of Russia for young scientists MK-3206.2014.2. Synthesis of catalysts on the basis of Pd и CeO₂ nanoparticles and in-situ x-ray spectral diagnostics of oxidation reactions on their surfaces (2014-2015)
3. Project of the RFBR 14-02-31555-mol_a for young scientists. X-ray spectral monitoring of oxidation state and atomic structure of coordination compounds at various time scales of photochemistry reactions (2014-2015)
4. RSF grant, 17-72-10245, Operando X-ray spectroscopy characterization of nanocatalysts for industrial applications (2017-2019)

Fellowships and Awards

- The scholarship of the President of Russia to study abroad, 2010-2011
- The grant of the President of Russia for young scientists - PhD, 2014
- Winner of the program for young scientist innovations UMNIK-2010
- Winner of the competition of the russian-german interdisciplinary center G-RISC in 2011 and 2014
- Diploma I in the competition among talks of young scientists in russian-german workshop Nanodesign: Physics, Chemistry, Computer Modelling (2013)
- Winner of the competition organized by the Endowment fund of the Southern federal university "Best young lecturer" (2017)

Supervision of Students

- Supervisor of 1 master and 1 bachelor students
- Co-supervisor of 3 PhD students: A. Tereshchenko, V. Shapovalov, M. Kirichkov

Teaching Activities

- Master course "Condensed Matter Physics". Master program "Nanoscale Structure of Materials", Southern Federal University
- PhD course "Physics and technology of nanostructures atomic and molecular physics"

Five main publications

Guda, A. A.; Guda, S. A.; Lomachenko, K. A.; Soldatov, M. A.; Pankin, I. A.; Soldatov, A. V.; Braglia, L.; Bugaev, A. L.; Martini, A.; Signorile, M.; Groppo, E.; Piovano, A.; Borfecchia, E.; Lamberti, C. "Quantitative structural determination of active sites from in situ and operando XANES spectra: From standard ab initio

simulations to chemometric and machine learning approaches" *Catalysis Today* 2019 in press (Impact-factor: 4.667) DOI: 10.1016/j.cattod.2018.10.071

A.A. Guda, A.L. Bugaev, R. Kopelent, L. Braglia, A.V. Soldatov, M. Nachtegaal, O.V. Safonova, G. Smolentsev "Fluorescence-detected XAS with sub-second time resolution reveals new details about the redox activity of Pt/CeO₂ catalyst" *Journal of Synchrotron Radiation* 2018 25 989-997 (Impact-factor: 3.011)

S. A. Guda, A. A. Guda, M. A. Soldatov, K. A. Lomachenko, A. L. Bugaev, C. Lamberti, W. Gawelda, C. Bressler, G. Smolentsev, A. V. Soldatov, and Y. Joly "Optimized Finite Difference Method for the Full-Potential XANES Simulations: Application to Molecular Adsorption Geometries in MOFs and Metal–Ligand Intersystem Crossing Transients" *Journal of Chemical Theory and Computation* 2015 11 (9) 4512–4521 (Impact-factor: 5.389)

Dooshaye Moonshiram, Carolina Gimbert-Suriñach, Alexander Guda, Antonio Picon, C. Stefan Lehmann, Xiaoyi Zhang, Gilles Doumy, Anne Marie March, Jordi Benet-Buchholz, Alexander Soldatov, Antoni Llobet, and Stephen H. Southworth "Tracking the structural and electronic configurations of a cobalt proton reduction catalyst in water" *Journal of the American Chemical Society* 2016 138 (33) 10586-10596 (Impact-factor: 13.038)

A. Guda, N. Smolentsev, M. Rovezzi, E.M. Kaidashev, V.E. Kaydashev, A.N. Kravtsova, V.L. Mazalova, A.P. Chaynikov, E. Weschke, P. Glatzel, A.V. Soldatov "Spin-polarized electronic structure of the core-shell ZnO/ZnO:Mn nanowires probed by x-ray absorption and emission spectroscopy" *Journal of Analytical Atomic Spectrometry* 2013 28 (10) 1629-1637 (Impact-factor: 3.155)