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Born 1968 in Moscow

Scientific interests

Photoemission spectroscopy, surface reactivity, topological insulators, operando photoemission studies of electrochemical interfaces.

LVY studies electronic properties and surface chemistry including reaction and growth mechanisms at the atomic level for different materials such as semiconductor crystals and topological insulators and different carbon materials including carbon nanotubes, nanowalls and graphene using core-level and valence band photoemission spectroscopy and ab initio quantum chemical simulation.

Current projects

1. "SYnchrotron and NEutron STudies for Energy Storage (SYNESTESia)" (2014-2017) BMBF- Ministry of Education and Science of Russia
2. "Topological surface states under the influence of the exchange interaction" (2013-2015) DFG priority program SPP 1666 and Impuls-und Vernetzungsfonds der Helmholtz-Gemeinschaft, Grant No. HRJRG-408.
3. "Reactivity of thermoelectric clathrate compounds towards air constituents" (2013-2015) FRBR, Grant No. 13-03-01187

Education and career

1985–1990 Study of chemistry in Lomonosov Moscow State University (MSU)
1990 Diploma thesis at MSU
1990–1993 Ph. D. student at MSU
1996 Ph. D. at MSU "Vapor growth kinetics of (Pb,Ge)Te crystals"
1994-1997 Assistant Professor at MSU
1997 -2008 Scientific Researcher
2001-2002 Guest Professor at Wihlhelms Westfaelische Universitaet, Muenster
2004 Principal Researcher at Samsung Electromechanics R@D institute
2008 Habilitation at MSU "Reactivity of Ge,Sn,Pb chalcogenides in solid state and solid-gas reactions"
2012 to present Leading Researcher,
Supervising 9 PhD student, 17 diploma student (in total)

From 2003 to present BESSY II, ELETTRA, ALBA user

Current teaching

1. Lecture course on Characterization Methods of inorganic compounds (Inorganic chemistry Division)
2. Practical course on Material Characterization by XPS (Department of material science)
3. Practical course on Modern Devices for Material Characterization by XPS (Department of material science)

Selected Publications

1. Itkis D. M., Semenenko D. A., Kataev E. Yu., Belova A. I., Neudachina V. S., Sirotina A.P., Hävecker M., Teschner D., Knop-Gericke A., Dudin P., Barinov A., Goodilin E. A., Shao-Horn Y., Yashina L.V. **Reactivity of Carbon in Lithium–Oxygen Battery Positive Electrodes** *Nano Lett* 13 (10), 2013, pp 4697–4701 DOI: 10.1021/nl4021649
2. Usachov D., Fedorov A., Vilkov O., Senkovskiy B., Adamchuk V.K., Yashina L.V., Volykhov A.V., Farjam M., Verbitskiy N.I., Grüneis A., Laubschat C., Vyalikh D.V. **The Chemistry of Imperfections in N-Graphene** *Nano Lett.* 2014, 14, 4982–4988 dx.doi.org/10.1021/nl501389h |
3. Yashina, L.; Sánchez-Barriga, J.; Scholz, M.; Volykhov, A.; Sirotina, A.; Neudachina, V.; Tamm, M.; Varykhalov, A.; Marchenko, D; Springholz, G.; Bauer, G.; Knop-Gericke, A.; Rader, O. **Negligible Surface Reactivity of Topological Insulators Bi₂Se₃ and Bi₂Te₃ Towards Oxygen and Water** *ASC nano* 7 (2013) 5181-5191 DOI: 10.1021/nn400908b
4. Kataev E. Yu., Itkis D.M., Fedorov A., Senkovskiy B., Usachov D., Verbitskiy N., Grüneis A., Barinov, A., Tsukanova D. Yu., Volykhov A.A., Mironovich K., Krivchenko V., Rybin M., Obraztsova E., Laubschat C., Vyalikh D., Yashina L.V. **Oxygen reduction by lithiated graphene and graphene-based materials** *ASC nano* 2015 DOI 10.1021/nn5052103
5. Usachov D. Yu., Fedorov A.V., Petukhov A.E., Vilkov O. Yu., Rybkin A.G., Otrokov M.M., Arnau A., Chulkov E.V., Yashina L.V., Farjam M., Adamchuk V.K., Senkovskiy B.V., Laubschat C., Vyalikh D.V. **Epitaxial B-Graphene: Large-Scale Growth and Atomic Structure** *ACS nano* 9 (2015) 7314–7322 DOI: 10.1021/acsnano.5b02322
6. Paris A., Verbitskiy N., Nefedov A., Wang Y., Fedorov A.V., Haberer D., Oehzelt M., Petaccia L., Usachov D., Vyalikh D.V., Sachdev H., Wöll C., Knupfer M., Büchner B., Calliari L., Yashina L.V., Irle S., Grüneis A. **Kinetic isotope effect in the hydrogenation and deuteration of graphene** *Advanced Functional Materials*, 23, (2013) 1628–1635 DOI: 10.1002/adfm.201202355
7. Sánchez-Barriga J., Varykhalov A., Springholz G., Steiner H., Kirchschrager R., Bauer G., Caha O., Schierle E., Weschke E., Unal A.A., Valencia S., Dunst M., Braun J., Ebert H., Minár J., Golias E., Yashina L., Ney A., Holy V., Rader O. **Nonmagnetic band gap at the Dirac point of the magnetic topological**

insulator ($\text{Bi}_{1-x}\text{Mn}_x$) $_2\text{Se}_3$ " *Nature Communication* 2016 #NCOMMS-13-10232C DOI: 10.1038/ncomms10559

8. Sánchez-Barriga J., Varykhalov A., Braun J., Xu S.-Y., Alidoust N., Kornilov O., Minár J., Hummer K., Springholz G., Bauer G., Schumann R., Yashina L. V., Ebert H., Hasan M. Z., Rader O. **Photoemission of Bi_2Se_3 with Circularly Polarized Light: Probe of Spin Polarization or Means for Spin Manipulation?** *Physical Review X* 4, 011046 (2014) DOI: 10.1103/PhysRevX.4.011046
9. Scholz M. R., Sánchez-Barriga J., Braun J., Marchenko D., Varykhalov A., Lindroos M., Yung Jui Wang, Hsin Lin, Bansil A., Minár J., Ebert H., Volykhov A., Yashina L.V., Rader O. **Reversal of the circular dichroism in the angle-resolved photoemission from Bi_2Te_3** *Physical Review Letters* 110 (2013), 216801 DOI: 10.1103/PhysRevLett.110.216801
10. Scholz M. R., Sanchez-Barriga J., Marchenko D., Varykhalov A., Volykhov A., Yashina L., Rader O. **Tolerance of topological surface states towards magnetic moments: Fe on Bi_2Se_3** *Physical Review Letters* 108, 256810 (2012) DOI: 10.1103/PhysRevLett.108.256810
11. Krivchenko V.A., Evlashin S.A., Mironovich K.V., Verbitskiy N.I., Nefedov A., Wöll C., Kozmenkova A.Ya., Suetin N.V., Svyakhovskiy S.E., Vyalikh D.V., Rakhimov A.T., Egorov A.V., Yashina L.V. **Carbon nanowalls: the next step for physical manifestation of the black body coating** *Scientific Reports* 3 (2013) 3328 DOI: 10.1038/srep03328
12. Vilkov O., Fedorov A., Usachov D., Yashina L. V., Generalov A. V., Borygina K., Verbitskiy N. I., Grüneis A., Vyalikh D. V. **Controlled assembly of graphene-capped nickel, cobalt and iron silicides** *Scientific Reports* 3 (2013) 168 DOI: 10.1038/srep02168
13. Eliseev A.A., Yashina L.V., Brzhezinskaya M.M., Chernysheva M., Kharlamova M.V., Verbitskiy N.I., Kiselev N.A., Zakalyuhin R.M., Hutchison J.L., Freitag B., Vinogradov A.S. **Structure and electronic properties of AgX ($\text{X}=\text{Cl}, \text{Br}, \text{I}$)-intercalated single-wall carbon nanotubes** *Carbon* 48 (2010) 2708–2721
14. Krivchenko, V.A., Dvorkin, V.V., Dzbanovsky, N.N., Timofeyev, M.A., Stepanov, A.S., Rakhimov, A.T., Suetin, N.V., Vilkov, O., Yashina, L.V., **Evolution of carbon film structure during its catalyst-free growth in the plasma of direct current glow discharge** *Carbon* 50 (2012) 1477–1487doi: 10.1016/j.carbon.2011.11.018
15. Eliseev A.A., Yashina L.V., Verbitskiy N.I., Brzhezinskaya M.M.; Kharlamova M.V., Chernysheva M.V., Lukashin A.V., Kiselev N.A., Kumskov A.S., Freitag B., Generalov A.V., Vinogradov A.S., Zubavichus Y.V., Kleimenov E., Nachttegaal M. **Interaction between single walled carbon nanotube and 1D crystal in $\text{CuX}@\text{SWCNT}$ ($\text{X}=\text{Cl}, \text{Br}, \text{I}$) nanostructures** *Carbon* 50 (2012) 4021–4039 DOI: 10.1016/j.carbon.2012.04.046.
16. Sánchez-Barriga J., Scholz M. R., Golias E., Rienks E., Marchenko D., Varykhalov A., Yashina L.V., Rader O. **Anisotropic effect of warping on the**

lifetime broadening of topological surface states in angle-resolved photoemission from Bi₂Te₃ *Physical Review B* 90, 195413 (2014)
DOI:10.1103/PhysRevB.90.195413

17. Kuznetsov M.V., Yashina L.V., Sánchez-Barriga J., Ogorodnikov I.I., Vorokh A. S., Volykhov A.A., Koch R. J., Neudachina V.S., Tamm M.E., Sirotina A.P., Varykhalov A., Springholz G, Bauer G., Riley J.D., Rader O. **Atomic structure of Bi₂Se₃ and Bi₂Te₃ (111) surfaces probed by photoelectron diffraction and holography** *Physical Review B* 2015

Book chapters

- Eliseev A., Yashina L., Kharlamova M., Kiselev N. in «Electronic Properties of Carbon Nanotubes Edited by: Jose Mauricio Marulanda ISBN 978-953-307-499-3, Hard cover, 680 pages Publisher: [InTech](#) Publication date: July 2011
Chapter 8: One-dimensional crystals inside single-walled carbon nanotubes: growth, structure and electronic properties p127-254
- Zlomanov V.P., Yashina L.V. **Phase Diagrams and Growth of Bulk Lead Chalcogenides Crystals**. Chapter III in Lead Chalcogenides: Physics And Applications, ed. Khokhlov D.. Gordon&Breach. 2002. P. 35-121.