
Ariel University,
Engineering Sciences Faculty,
Department of Chemical Engineering,
Biotechnology and Materials
Ariel, Israel

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Israel
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Research Interests

Crystal structure, applied x-ray crystallography, XRD analysis, cryo-crystals, intercalation processes, surface science, superhydrophobic surfaces, self-propulsion, nanotechnology, synthesis, functionalization and characterization of nano-scale materials, theory of solid solutions, numerical analysis methods.

Education

ILTPE - B.Verkin Institute for Low Temperature Physics and Engineering of the NAS of Ukraine, Kharkov, Ukraine.

Ph. D. in solid state physics

October 2014

Ph.D. thesis: "*Kinetic of intercalation of fullerite C₆₀ with H₂, Ne, Ar gases. Structural and thermodynamical properties of these intercalated systems*".

Adviser: member-corr. of NAS of Ukraine, prof. M.A. Strzhemechny

ILTPE - B.Verkin Institute for Low Temperature Physics and Engineering of the NAS of Ukraine, Kharkov, Ukraine.

Post Graduate courses

May 2004

Adviser: member-corr. of NAS of Ukraine, prof. M.A. Strzhemechny

Kharkov Polytechnical University, Kharkov, Ukraine.

Master's Degree

February 2000

MD thesis: "*Thermodynamic properties of orientational glass in CD₄-Kr solid solutions*".

Adviser: Ph.D. Senior Scientist A.P. Isakina

Professional Experience

Ariel University, Engineering Sciences Faculty, Department of Chemical Engineering, Biotechnology and Materials, Ariel, Israel

Post Doctorate position, Research Associate

October 2017 – present time

Supervisor: Prof. Ed. Bormashenko

ILTPE - B.Verkin Institute for Low Temperature Physics and Engineering of the NAS of Ukraine

Junior Research Scientist

January 2004 – October 2017

ILTPE - B.Verkin Institute for Low Temperature Physics and Engineering of the NAS of Ukraine

Second Rank Research Engineer

August 2000 – January 2004

ILTPE - B.Verkin Institute for Low Temperature Physics and Engineering of the NAS of Ukraine

Research Engineer

December 1999 – August 2000

Professional Skills

Instrumental skills: X-ray diffraction equipment; Ramé-Hart Advanced goniometer; spincoating; cryogen handling (liquid nitrogen; liquid helium); high vacuum handling; optical microscopy; design, machining, and assembly of experimental components.

Software and programming skills: MsOffice, MathCad, MATLAB, Origin, Inkscape, CorelDraw, Photoshop, VirtualDub, TopView, InterBase, FlySpeed SQL Query, HTML, XML.

Honors and Awards

2006 – Winner of the Scholarship of the National Academy of Sciences of Ukraine for young scientists

Public Activity

2003 - 2006 Renewal initiator of the “Council of Young Scientists and Engineers of B. Verkin Institute for Low Temperature Physics and Engineering.”
2004 - 2006 Member of presidium of the “Council of Young Scientists and Engineers of B. Verkin Institute for Low Temperature Physics and Engineering.”
2004-2006 Member of Organizing committee of “*Young Scientists Conference on Low Temperature Physics*”

Publications of the last three years

- Edward Bormashenko, Irina Legchenkova, Mark Frenkel. Symmetry and Shannon Measure of Ordering: Paradoxes of Voronoi Tessellation. *Entropy* 21(5), pp. 452, (2019).
- Alla Vilks, Irina Legchenkova, Mark Frenkel, Shraga Shoval, Edward Bormashenko. Moses Effect Enables Remote Control of Self-Propulsion of Diamagnetic Rotator. *Surface Innovations* 7, (2019).
- Oleg Gendelman, Mark Frenkel, Viktor Fliagin, Natalia Ivanova, Viktor Danchuk, **Irina Legchenkova**, Alla Vilks, Edward Bormashenko. *Study of the Displacement of Floating Diamagnetic Bodies by Magnetic Field*. *Surface Innovations*, 7(3-4), 194-202, (2019). <https://doi.org/10.1680/jsuin.18.00064>. (Impact Factor 1.551).
- Edward Bormashenko, Mark Frenkel and **Irina Legchenkova**. *Is the Voronoi Entropy a True Entropy? Comments on “Entropy, Shannon’s Measure of Information and Boltzmann’s H-Theorem*. *Entropy*, 21(3), 251, (2019). <https://doi.org/10.3390/e21030251>. (Impact Factor 2.305).
- Edward Bormashenko, Mark Frenkel, Alla Vilks, **Irina Legchenkova**, Alexander A. Fedorets, Nurken E. Aktaev, Leonid A. Dombrovsky and Michael Nosonovsky. *Characterization of Self-Assembled 2D Patterns with Voronoi Entropy*. *Entropy* 20(12), 956, (2018). doi: 10.20944/preprints201811.0535.v1. (Impact Factor 2.305).
- **Irina Legchenkova**, Gilad Chaniel, Mark Frenkel, Yelena Bormashenko, Shraga Shoval, Edward Bormashenko. *Magnetically inspired deformation of the liquid/vapor interface drives soap bubbles*. *Surface Innovations* 6(4-5), 231-236, (2018). (Impact Factor 1.551).
- Mark Frenkel, Leonid Dombrovsky, Victor Multanen, Viktor Danchuk, **Irina Legchenkova**, Shraga Shoval, Yelena Bormashenko, Bernard P. Binks, Edward Bormashenko. *Self-Propulsion of Water-Supported Liquid Marbles Filled with Sulfuric Acid*. *J. Phys. Chem. B* 122 (32), 7936–7942, (2018). (Impact Factor 3.146).
- A. Starostin, V. Valtsifer, Z. Barkay, **I. Legchenkova**, V. Danchuk, E. Bormashenko. *Drop-wise and film-wise water condensation processes occurring on metallic micro-scaled surfaces*. *Applied Surface Science* 444, 604, (2018). (Impact Factor 4.439).
- Mark Frenkel, Viktor Danchuk, Victor Multanen, **Irina Legchenkova**, Yelena Bormashenko, Oleg Gendelman, Edward Bormashenko. *Toward an Understanding of Magnetic Displacement of Floating Diamagnetic Bodies, I: Experimental Findings*. *Langmuir* 34 (22) 6388, (2018). (Impact Factor 3.789).
- A.I. Prokhvatilov, A.V. Dolbin, N.A. Vinnikov, R.M. Basnukaeva, V.B. Esel’son, V.G. Gavrilko, M.V. Khlistyuck, **I.V. Legchenkova**, Yu.E. Stetsenko, V.V. Meleshko, V.Yu. Koda. *Thermocatalytic pyrolysis of CO molecules. Structural and sorption characteristics of carbon nanomaterial*. *Low. Temp. Phys.* 44 (4), 334, (2018). (Impact Factor 0.86).
- Evgeny Shulzinger, **Irina Legchenkova**, Edward Bormashenko. *Co-occurrence of the Benford-like and Zipf Laws Arising from the Texts Representing Human and Artificial Languages*. arXiv preprint, arXiv:1803.03667, (2018).
- M.A. Strzhemechny, V.V. Danchuk, **I.V. Legchenkova**. *Isolated spherical impurity in noble gas crystals*. *Fiz. Niz. Temp.* 43 (10), 1551, (2017). (Impact Factor 0.67).
- A.V. Dolbin, M.V. Khlistuck, V.B. Esel’son, V.G. Gavrilko, N.A. Vinnikov, R.M. Basnukaeva, A.I. Prokhvatilov, **I.V. Legchenkova**, and V.V. Meleshko, W.K. Maser and A.M. Benito. *The effect of the thermal reduction on the kinetics of low-temperature ⁴He sorption and the structural characteristics of graphene oxide*. *Fiz. Niz. Temp.* 43 (3), 471 (2017).
- A.G. Sivakov, S.I. Bondarenko, A.I. Prokhvatilov, A.S. Pokhila, V.P. Koverya, I.S. Dudar, **I.V. Legchenkova**, D.J. Gawryluk, M. Berkowski, R. Diduszko, R. Puzniak, A. Wisniewski. *Microstructural and transport properties of superconducting FeTe_{0.65}Se_{0.35} single crystals*. *Superconductor Science and Technology* 30(1), 015018, (2017) (Impact Factor 2.717).

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