

# CURRICULUM VITAE

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**Languages:** Russian, English.

**Date of birth** 23.02.1960

**Date of immigration (aliyah)** 29.04.2013

## *EDUCATION*

**1989-1994** **PhD in Engineering** (01.04.14, Molecular Physics and Thermal Physics).

Doctoral Project: Influence of Surface of Processing Technology and its Essence for Nucleation in Boiling Liquids. **Riga Technical University.**

**1977-1982** **Engineer in Technology of Mechanical Engineering.**

Graduate project: Research of micro thermo-cyclic methods of treatment of metallic surfaces. **Riga Polytechnic Institute (now Riga Technical University).**

**1974-1977** Correspondence School of the Specialized Educational Scientific Centre (*SESC*) at Novosibirsk State University (*NSU*), Specialty: Physics.

## **AREAS OF EXPERTISE**

More than 10 years experience in Thermal Physics and Physics of boiling. Investigation of influence of metallic surfaces and way of their treatment on the formation of nucleation centres. Porous structures. Separation and self-assembly processes. Study of exo-electron emission (EEE) activity of metallic surface and exo-electrons influence upon nucleation in the metal-liquid boundary zone. Spectral Fourier Analysis of EEE scanograms of surface of metal with different mechanical treatment in order to develop new method of EEE analysis. Investigation of the possibility to use electro discharge method of visualisation (Kirlian effect) in the study of centres of boiling distribution on the heat exchange surface. Tecla resonant

transformer's (the part of use electro discharge visualisation equipment) resonant features study. Study of fatigue, fracture and the process of diffusion in the metal's surface under the centre of boiling. Computer treatment of experimental data.

## **ACADEMIC AND PROFESSIONAL EXPERIENCE**

**2015-2018** Researcher, Ariel University, Laboratory of Interface Science.

**2000-2015** Programmer: c/c++, basic, c#.

Real time, controllers, PC, SQL database, html, Linux, Windows.

**1994-1999** Leading Engineer, Chief Researcher. Chair of Thermal Technique Research in Faculty of Transport and Mechanical Engineering , Riga Technical University.

May 1996 Participation in [international TEMPUS project](#) (National Technical University of Athens (NTUA), Athens, Greece).

Summer 1995 Research Fellowship under the guidance of Professor Keith Miller in Structural Integrity Research Institute, University of Sheffield (SIRIUS). England.

**1988-1994** Engineer, Assistant Chair of Thermal Technique Research in the Faculty of Power and Electrical Engineering, Riga Technical University.

**1982-1988** Processing Engineer. Riga Electric Machine Building Factory.

**SCIENTIFIC SUPERVISION: 1 BS students, 2 MSc students.**

**EDITING:** Acting editor of International Proceedings “Boiling and Condensation”

(1997-1998)

**PEDAGOGICAL ACTIVITY:** Assistant Chair in Center of Computational Technology in Mechanical, Process and Materials Engineering, University of Latvia (1997-1999)

**LIST OF PUBLICATIONS:**

[1] Frenkel M.M. Model of pore formation under the boiling on a metallic surface.// Boiling and condensation. - Riga Technical University, Riga. 1992. pp.54-61.

[2] Ilyin I.N., Frenkel M.M. Spectral analysis of EEE scanograms concerning nuclear processes in boiling.// Materials of 11th international symposium on exoelectron emission and applications. Glucholazy, Poland, 11-17 September 1994.

[3] Ilyin I.N., Frenkel M.M. Nucleation of Liquid on the Surface of Solid Body in the Pressure Drop.// International Symposium on Heat and Mass Transfer. 1995. Minsk, Belarus.

[4] D.P. Turlajs, M.M. Frenkel. Interaction of Liquid with Heating Surface in the Boiling Process.//Latvian Journal of Physics and Technical sciences, 1996, Nr.6.

[5] Ilyin I.N., Frenkel M.M. Effect of Metallic Surface and the Way of Its Treatment Upon the Formation of the Nucleating Centres.// Materials of International Symposium on the Physics of Heat Transfer in Boiling and Condensation. 1997. Moscow.

[6] Ilyin I.N., Ukladiga I.A., Frenkel M.M. On the influence of hydrogen ion (pH) concentration on the coefficient of convective heat transfer under nucleate boiling // Boiling and condensation. - Riga Technical University, Riga. 1997. pp.123-126.

[7] Multanen V., Pogreb R., Bormashenko Ye., Shulzinger E., Whyman G., Frenkel M., Bormashenko Ed. Under-Liquid Self-Assembly of Submerged Buoyant Polymer Particles Langmuir, 32 (23) (2016) 5714–5720 .

**[Under-Liquid Self-Assembly of Submerged Buoyant Polymer Particles](#)**

By: Multanen, Victor; Pogreb, Roman; Bormashenko, Yelena; et al.

LANGMUIR Volume: 32 Issue: 23 Pages: 5714-5720 Published: JUN 14 2016

[8] Musin A., Grynyov R., Frenkel M., Bormashenko Ed. Self-propulsion of a metallic superoleophobic micro-boat, Journal of Colloid and Interface Science, 479 (2016) 182–188.

**[Self-propulsion of a metallic superoleophobic micro-boat](#)**

By: Musin, Albina; Grynyov, Roman; Frenkel, Mark; et al.  
JOURNAL OF COLLOID AND INTERFACE SCIENCE Volume: 479 Pages: 182-188 Published: OCT 1 2016

**[\[9\] Camphor-Engine-Driven Micro-Boat Guides Evolution of Chemical Gardens](#)**

By: Frenkel, Mark; Multanen, Victor; Grynyov, Roman; et al.  
SCIENTIFIC REPORTS Volume: 7 Article Number: 3930 Published: JUN 21 2017

**[\[10\] Paradoxical coffee-stain effect driven by the Marangoni flow observed on oil-infused surfaces](#)**

By: Chaniel, Gilad; Frenkel, Mark; Multanen, Victor; et al.  
COLLOIDS AND SURFACES A-PHYSICOCHEMICAL AND ENGINEERING ASPECTS Volume: 522 Pages: 355-360 Published: JUN 5 2017

**[\[11\] Self-assembled levitating clusters of water droplets: pattern-formation and stability](#)**

By: Fedorets, Alexander A.; Frenkel, Mark; Shulzinger, Evgeny; et al.  
SCIENTIFIC REPORTS Volume: 7 Article Number: 1888 Published: MAY 15 2017

**[\[12\] Self-propelling rotator driven by soluto-capillary marangoni flows](#)**

By: Frenkel, Mark; Whyman, Gene; Shulzinger, Evgeny; et al.  
APPLIED PHYSICS LETTERS Volume: 110 Issue: 13 Article Number: 131604 Published: MAR 27 2017

**[\[13\] Friction, Free Axes of Rotation and Entropy](#)**

By: Kazachkov, Alexander; Multanen, Victor; Danchuk, Viktor; et al.  
ENTROPY Volume: 19 Issue: 3 Article Number: 123 Published: MAR 2017

**[\[14\] Superposition of Translational and Rotational Motions under Self-Propulsion of Liquid Marbles Filled by Aqueous Solutions of Camphor](#)**

E Bormashenko, M Frenkel, Y Bormashenko, G Chaniel, V Valtsifer, ...  
Langmuir

**[\[15\] Small Levitating Ordered Droplet Clusters: Stability, Symmetry, and Voronoi Entropy](#)**

AA Fedorets, M Frenkel, E Bormashenko, M Nosonovsky  
The Journal of Physical Chemistry Letters

**[\[16\] Magnetic Field Inspired Contact Angle Hysteresis Drives Floating Polyolefin Rafts](#)**

M Frenkel, V Danchuk, V Multanen, E Bormashenko  
Colloid and Interface Science Communications 22, 38-41

