

# Inna Gurevitch, PhD

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**Materials Engineer and Polymer Scientist** with multidisciplinary expertise in R&D of advanced materials tailored to printable electronics, displays, lithium batteries and X-ray generator applications

- *Creative, hands-on professional with extensive expertise in Nanomaterials synthesis and surface modification, Colloidal dispersions, Polymer synthesis and processing, Ceramic and Diamond depositions, Metals and Carbides surface treatments development*
- *Digital inks formulation for micro LED and AR/VR displays; Synthesis and development of Cathode, Electrolyte materials for batteries; fabrication of thin films*
- *Possess extensive experience in dynamic thermo-mechanical analysis (DMA), X-ray photoelectron spectroscopy and electron microscopy (SEM, TEM)*
- *Technical expertise in materials selection and optimization; test methods development, and data analysis based on structure-properties relationships; data modeling*
- *Cross-functional team player, problem-solver with high communication skills*

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## PROFESSIONAL EXPERIENCE

*Kateeva, Inc., Newark, CA (November 2016 – present)*

### **Senior Scientist**

Technical lead in formulation of Quantum Dot inks for Color Filter application in QLED/micro LED displays, inkjet printable and curable:

- Developed solvent-free ink formulations supporting high nanoparticles (QD and metal oxide) loading. Novel ink materials enabled stable jetting and pixel printing of thin layers, when yielding films with high optical density and quantum efficiency per customers requirements
- Invented, then established a novel process for isolation narrow-size distributed metal oxide nanoparticles, allowing an operation of fine optic detectors in printers, when achieving outstanding optical performance of resulting films
- Demonstrated ink prototype formulations of dye and pigment containing inks, solvent-free (dispersion, transfer and curable media development)
- Successfully established nano-indentation surface characterization method (nano-DMA) for thin films
- Developed low-stress inkjet printable, curable formulations for OLED thin film encapsulation, when tuning properties toward flexibility and thermo-mechanical performance
- Established test methods for thermo-mechanical analysis and vapor pressure technique

*Tribogenics, Los Angeles, CA (July 2015 - November 2016)*

### **Materials Engineer**

Project lead in engineering of metal/ceramics materials for X-ray portable analyzers:

- Identified high-hardness carbide materials with superior performance, then established their continuous supply, including QC methods
- Invented, then established and successfully outsourced an automated polishing process for high-hardness metals / carbides with controlled surface nano-scale roughness and oriented patterns
- Successfully collaborated with external vendor to develop smooth nano-crystalline diamond coating that demonstrated superior X-ray flux intensity and longevity vs. DLC-coated material
- Established, led and routinely performed Diamond and DLC coatings characterization: optical and electron microscopy (SEM), X-ray photoelectron spectroscopy (XPS), thickness and roughness measurements
- Successfully established and managed surface characterization projects with academic facilities (FIB, Raman analysis, wear resistance, nanoindentation, AFM studies)
- Established and operated e-beam metal depositions at academic facility
- Managed supply and QC for manufacturing set of DLC-coated materials, including surface treatments and processing

*SolidEnergy Systems, Waltham, MA (July 2014 - June 2015)*

### **Senior Scientist**

Design and synthesis of ceramic-polymer composite materials / engineering of lithium metal batteries:

- Successfully performed chemical modifications for commercially available materials (ions exchange on conducting polymer salts), followed by engineering polymer coating, battery cell assembly and testing
- Initiated and performed different materials types screening (polymers and ceramic fillers)

*Lawrence Berkeley National Laboratory, Berkeley, CA (November 2011 - July 2014)*

### **Postdoctoral Researcher**

Synthesis of nano-scale ceramic materials / engineering of lithium batteries:

- Successfully developed synthetic procedure for nano-crystalline active cathode material (LFP), followed by cathode slurry processing and battery cell testing and analysis
- Synthesis of reinforcing nano-crystalline metal oxide NPs for solid electrolytes in lithium metal batteries, followed by development of ceramic-block copolymer nanocomposites. Demonstrated prolonging lithium cell performance life by tailoring mechanical properties of electrolytes
- Extensively studied structure-properties relationships, basing on battery cell performance (electrochemistry, electron microscopy (SEM, TEM), X-ray photoelectron spectroscopy (XPS), thermo-mechanical analysis)

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## EDUCATION

**Ph.D. in Materials Science and Engineering**, (2007-2011). Technion – Israel Institute of Technology, Haifa, Israel

– Thesis title: *Porous Polymers Synthesized within Nanoparticle-Based Pickering Emulsions*

**M.Sc. in Chemical Engineering**, (2004-2006) Technion – Israel Institute of Technology, Haifa, Israel

– Thesis title: *Molecular Simulation of Polymer Adsorption on CNTs in Organic Solvent*

## SKILLS

- 5+ year industrial experience in challenging environments as start-ups
- Nanoparticles synthesis (liquid/solid-state), surface modification and ligand exchange
- Dispersions / emulsions / slurry preparation and development: sonication, ball milling, homogenizing, solution casting, spin coating
- Radical (including controlled) polymerization by UV / photo / thermal curing; emulsion polymerization
- Batteries assembly and testing
- Electron microscopy, XPS and thermo-mechanical analysis; dynamic light scattering (DLS), rheometry, calorimetry, spectrophotometry, FTIR, XRD
- Metal and ceramics depositions and substrates surface treatments
- Inert atmosphere glove box and Schlenk Line operation
- IT: Python, DOE, statistical analysis by JMP; Microsoft Office; Adobe Photoshop

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## Issued Patents

- M.S. Silverstein, I. Gurevitch; Liquid-retaining elastomeric composition (**2015**): [US 9,062,245](#)
- M.S. Silverstein, I. Gurevitch; Shape-memory structures (**2016**): [US 9,340,654](#)

## Selected Publications

- I. Gurevitch, M.S. Silverstein; *Macromolecules* (three publications: **2013**, 914-921; **2012**, 6450-6456; **2011**, 3398-3409)
- I. Gurevitch et al.; *J. Electrochem. Soc.* (**2013**, A1611-A1617)
- I. Gurevitch, M.S. Silverstein; *Soft Matter* (**2012**, 10378-10387)
- I. Gurevitch, M.S. Silverstein; *Polymer* (**2015**, 453-463)