



# Michael D. Schmitt, PhD

SENIOR ASSOCIATE

617-248-4789 | mschmitt@choate.com

Dr. Michael Schmitt helps clients across diverse technology spaces including semiconductor devices and processing, batteries, nanotechnology, optics, software, and medical devices to build and protect their intellectual property portfolios. Working in interdisciplinary teams that span the fields of chemistry, materials characterization, semiconductor devices and processing, computational modeling, nanotechnology and soft materials, he provides key insights into patent prosecution, portfolio strategy, due diligence, freedom-to-operate, invalidation, and litigation matters for a range of academic and industrial clients.

While working as a postdoctoral researcher in Carnegie Mellon University's Department of Materials Science and Engineering, Michael's work focused on utilizing polymer-based grafting approaches for improving efficiency and patternability of quantum-dot-based solid-state lighting devices. This work built on that done during his Ph.D. at Carnegie Mellon in Professor Michael Bockstaller's lab where he utilized surface-initiated atom transfer radical polymerization to control interactions between nanoparticles by precisely tailoring polymer graft architecture for improved mechanical performance, facile nano-domain patterning, and tunable bulk properties of flexible particulate assemblies. By treating these grafted particles as "building blocks" and focusing on simple systems comprised of one type of block, his work made significant advances in overcoming fundamental materials challenges relevant to the fields of soft photonics, phononics, and solid-state lighting among others.

Prior to his Ph.D. work, Michael worked on various projects in the fields of traditional light-emitting diode based solid-state lighting, novel Ohmic contact materials in such devices, and semiconductor processing in the lab of Professor Robert Davis at Carnegie Mellon.

## Focus Areas

### Intellectual Property

IP Counseling  
Post Grant  
Proceedings

### Private Equity and M&A

Life Sciences and  
Technology

## Publications and Presentations

- "Small Changes, Big Opportunity: Nanotechnology and Intellectual Property Law," co-author, *The SciTech Lawyer*, October 2019
- "Polymer ligand-induced autonomous sorting and reversible phase separation in binary particle blends," first author, *Science Advances*, 2016
- "Processing Fragile Matter: Effect of Polymer Graft Modification on the Mechanical Properties," first author, *Soft Matter*, 2016
- "Grafting PMMA Brushes from  $\gamma$ -Alumina Nanoparticles via SI-ATRP," co-author, *ACS Applied Materials and Interfaces*, 2016
- "Enhancing Initiation Efficiency in Metal-Free Surface-Initiated Atom Transfer Radical Polymerization (SI-

ATRP),” co-author, ACS Macro Letters, 2016

- “Tailoring Structure Formation and Mechanical Properties of Particle Brush Solids via Homopolymer Addition,” first author, Faraday Discussions, 2016
- “Matrix-free Particle Brush System with Bimodal Molecular Weight Distribution Prepared by SI-ATRP,” co-author, Macromolecules, 2015
- “New Class of Tunable Hypersonic Phononic Crystals Based on Polymer-Tethered Colloids,” co-author, Nature Communications, 2015
- “Role of Polymer Graft Architecture on the Acoustic Eigenmode Formation in Densely Polymer-Tethered Colloidal Particles,” co-author, ACS Macro Letters
- “Surface-initiated Polymerization as an Enabling Tool for Multifunctional (Nano-)Engineered Hybrid Materials,” co-author, Chemistry of Materials
- “Effect of Polymer-Graft Modification on the Order Formation in Particle Assembly Structures,” co-author, Langmuir

#### Education & Credentials

- Suffolk University Law School, JD (2022)
- Carnegie Mellon University, PhD (2015) *Materials Science and Engineering*
- Carnegie Mellon University, BS (2011) *Materials Science and Engineering, Russian Studies, and Minor in Mathematical Science*

#### Admissions

- Massachusetts
- U.S. Patent & Trademark Office