

Michael D. Schmitt, PhD

Patent Agent

T +1 (617) 248-4789 | mschmitt@choate.com



Dr. Michael Schmitt utilizes his extensive experience working in highly interdisciplinary teams that span the fields of chemistry, materials characterization, semiconductors, nanotechnology and soft materials to provide key insights regarding patent protection for a range of academic and industrial clients.

Prior to joining Choate, Dr. Schmitt was a postdoctoral researcher in Carnegie Mellon University's Department of Materials Science and Engineering where his 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 PhD 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 PhD, Dr. Schmitt 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.

EDUCATION

Carnegie Mellon University
PhD, 2015, *Materials Science and Engineering*

BS, 2011, *Materials Science and Engineering, Russian Studies, and Minor in Mathematical Science*

PRACTICE FOCUS

Intellectual Property Protection

Assists in the preparation and prosecution of patent applications.

PUBLICATIONS AND PRESENTATIONS

- "Processing Fragile Matter: Effect of Polymer Graft Modification on the Mechanical Properties," *first author, Soft Matter*, 2016.
- "Grafting PMMA Brushes from α 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.

PRACTICE AREAS

Intellectual Property
Protection

Technology

- “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, 2014.*
- “Surface-initiated Polymerization as an Enabling Tool for Multifunctional (Nano-)Engineered Hybrid Materials,” *co-author, Chemistry of Materials, 2014.*
- “Effect of Polymer-Graft Modification on the Order Formation in Particle Assembly Structures,” *co-author, Langmuir, 2013.*