Han Le, PhD

PATENT AGENT

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Dr. Han Le assists Choate's life sciences clients by utilizing her background in chemistry, physics, and materials science and engineering to help with the preparation and prosecution of patent applications, as well as freedom-to-operate and patentability analyses.

Prior to joining Choate, Han earned her PhD in Chemistry from the University of California, Berkeley, where she was awarded a National Science Foundation Graduate Research Fellowship. Her doctoral research in the lab of Professor Peidong Yang centered on developing ferroelectric semiconductors and investigating their ferroelectricity, optical properties, and electronic band structures for data storage, microelectronics, displays, and photonics. Part of Han's research involved engineering strain and investigating its impact on the stability and photovoltaic device performance of perovskite nanostructures. As part of her doctoral work in the lab of Professor Paul Alivisatos, she designed and built optical imaging and spectroscopic instrumentation. Han gained extensive experience working with diverse materials, including thin film solar cells, metal-organic frameworks, polymers and supramolecular assemblies, and 2D materials. During her PhD, Han also served as a contributor to *Physics World* of the Institute of Physics and as a staff writer and editor for the *Berkeley Science Review*, where she wrote articles on advanced materials, AI-based biomedical devices, and quantum computing technologies.

Han received her undergraduate degrees in Chemistry and Mathematics with a minor in Physics at Franklin and Marshall College. While there, she established synthetic methods for semiconductor nanostructures and investigated their plasmonics and photocatalysis for solar absorbers in the lab of Professor Katherine Plass. Additionally, she conducted functional studies of mutant genes associated with inherited diseases of the nervous system in the Biology department. Han also interned at UC Irvine, where she developed organic and organometallic syntheses of complexes and ligands used as catalysts for CO reduction.

Focus Areas

Intellectual Property

IP Counseling

Publications and Presentations

- Tissue-like hydrogel semiconductors show promise for next-generation bioelectronics," author, *Physics World*, February 2025
- "AI goes viral: using machine learning to accelerate gene therapy," author, *Berkeley Science Review, Issue 47*, December 2024
- "Turning a negative into a positive: advancing energy storage with negative capacitance," author, *Berkeley Science Review, Issue 47*, December 2024
- "Laser-based headset assesses stroke risk using the brain's blood flow," author, *Physics World*,

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December 2024

- "Coherently Coupled Carrier and Phonon Dynamics in Elemental Tellurium Probed by Few-Femtosecond Core-Level Transient Absorption," co-author, *arXiv preprint*, November 2024
- "Quantum error correction research yields unexpected quantum gravity insights," author, *Physics World*, November 2024
- "Emissive chalcogenide perovskite nanowires," co-first author, in review
- "Supramolecular assembly of metal halide molecular wires," co-first author, in review
- "Room-temperature ferroelectric epitaxial nanowire arrays with photoluminescence," first author, *Nano Letters*, April 2024
- "A New Era: Key Implications of the Inflation Reduction Act on the Healthcare and Biopharma Ecosystem," author, *Biotech Connection–Bay Area Viewpoints,* February 2024
- "Supramolecular assembly of halide perovskite blue and green emitters with near-unity luminescence," co-author*, Science*, January 2024
- "Quantification of strain and its impact on the phase stabilization of all-inorganic cesium lead iodide perovskites," presenter, Materials Research Society Fall Meeting & Exhibit, November 2023
- "Quantification of strain and its impact on the phase stabilization of all-inorganic cesium lead iodide perovskites," first author, *Matter*, June 2023
- "Laser-accelerated phase transformation in cesium lead iodide perovskite," co-author, *Matter*, May 2022
- "Controlling the Phase Transition in CsPbI3 Nanowires," co-author, *Nano Letters*, March 2022
- "Effects of I2 on Cu2–xS Nanoparticles: Enabling Cation Exchange but Complicating Plasmonics," first author, *ACS Materials Letters*, January 2020

Education & Credentials

- University of California, Berkeley, PhD (2024) *Chemistry*
- Franklin & Marshall College, BA (2019) *Chemistry, Mathematics, Physics, magna cum laude*

Admissions

- U.S. Patent & Trademark Office