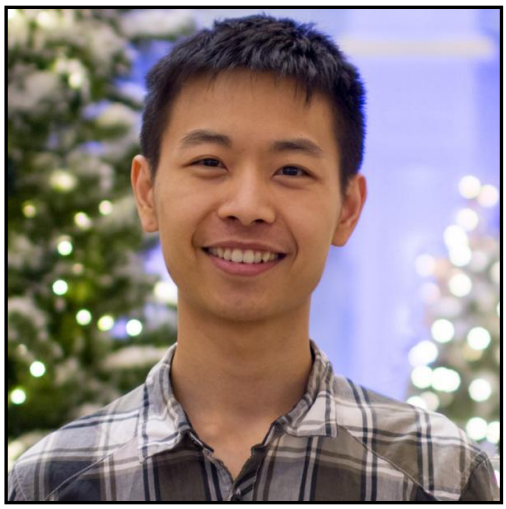

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Research interests:

- Study properties of nanoparticle membranes and other 2D materials for sensor, nanofiltration, and coating applications.
- Model experimentally self-assembled nanostructures using large-scale atomistic and coarse-grained molecular dynamics simulations.
- Develop coarse-grained models and force fields using optimization techniques and machine learning algorithms for the study of water crystallization and nanoparticle ligand dynamics.

Selected publications:

1. G. Singh, H. Chan, T. Udayabhaskararao, E. Gelman, D. Peddis, A. Baskin, G. Leitus, P. Král, and R. Klajn, "Magnetic field-induced self-assembly of iron oxide nanocubes", *Farad. Discuss 2015*, **181**, 403–421.
2. J. Yeom, B. Yeom, H. Chan, S. Dominguez-Medina , J. H. Bahng, G. Zhao, W.-S. Chang, S. J. Chang, P. Zhang, S. Link, P. Král, and N. A. Kotov, "Chiral Templating of Self-Assembling Nanostructures by Circularly Polarized Light", *Nat. Mat. 2015*, **14**, 66–72.
3. M. K. Bera, H. Chan, D. F. Moyano, H. Yu, S. Tatur, D. Amoanu, W. Bu, V. M. Rotello, M. Meron, P. Král, B. Lin, and M. L. Schlossman, "Interfacial Localization and Voltage-Tunable Arrays of Charged Nanoparticles", *Nano Lett. 2014*, **14** (12), 6816–6822.
4. G. Singh, H. Chan, A. Baskin, E. Gelman, N. Repnin, P. Král, and R. Klajn, "Self-Assembly of Magnetite Nanocubes into Helical Superstructures", *Science 2014*, **345** (6201), 1149–1153.
5. I. Strauss, H. Chan, and P. Král, "Ultralong Polarization Chains Induced by Ions Solvated in Confined Water Monolayers", *J. Am. Chem. Soc. 2014*, **136** (4), 1170–1173.
6. H. Chan, A. Demortiere, L. Vuković, P. Král, and C. Petit, "Colloidal Nanocube Supercrystals Stabilized by Multipolar Coulombic Coupling", *ACS Nano 2012*, **6** (5), 4203–4213.
7. J. He, X-M. Lin, H. Chan, L. Vuković, P. Král, and H. Jaeger, "Diffusion and Filtration Properties of Self-Assembled Gold Nanocrystal Membranes", *Nano Lett. 2011*, **11** (6), 2430–2435.
8. H. Chan and P. Král, "Self-Standing Nanoparticle Membranes and Capsules", *Nanoscale 2011*, **3** (4), 1881–1886.