Research Areas

- Electronic, Magnetic & Photonic Materials
- Electron Microscopy
- Nanomaterials & Nanotechnology
- Nanomechanics & Plasticity

Research Interests

The Mkhoyan Lab is an analytical electron microscopy lab where research at the atomic scale is daily routine. When materials are so small that measuring their dimensions and observing their behavior require atomic-level precision, experimental tools with the same atomic-scale sensitivity are essential. The technological developments in creating nanomaterials and in electron microscopy with ultra-high-resolution capabilities have in recent years been converging on a common objective, promising to open a new field of intriguing possibilities.

TEM and dedicated analytical (S)TEM have recently reached a major milestone. With the advent of lens aberration correction, microscopes now achieve sub-Angstrom resolution. In combination with quantitative spectroscopy these microscopes provide unprecedented experimental capabilities.

The study of these "very small" materials promises to pave the way to new discoveries about their properties and the physical processes occurring inside them. In our lab not only do we address puzzling questions about what happens to materials at this scale, but also we kindle the scientific imagination to anticipate new questions that have heretofore never occurred.

Awards

- Outstanding Postdoctoral Mentor Award, Minnesota Postdoctoral Association, 2015
- 3M Non-Tenured Faculty Award, 2010.

Selected Publications


