

# Graduate Research Assistant Position in Materials Science & Engineering Interdisciplinary Graduate Program

Research Lab: [Functional Ceramics](#)

Position Supervisor: [Rick Ubic](#), *PhD* (rickubic@boisestate.edu)

Lab Overview: Our main focus is the crystallography and structural characterization of functional ceramics including microwave dielectrics, ferroelectrics, and ionic conductors, with a special emphasis on the crystal chemistry of perovskite materials including hybrid organic-inorganic perovskites for photovoltaic applications.

Position Description: The Functional Ceramics lab is seeking a Ph.D. student to undertake the synthesis of perovskite solar cells. Advances in hybrid organic-inorganic ceramics have shown lead halide perovskites like  $(\text{CH}_3\text{NH}_3)\text{PbI}_3$  to be promising candidates for thin-film photovoltaics, allowing low-cost synthesis of solar cells. Efficiency values of ~20% now commonly reported put these materials in the same league as silicon. The perovskite is the optically-active layer in such devices, akin to the electron-donor material in heterojunction solar cells, absorbing light and injecting electrons (and holes) into conducting media. Other layers assist with charge separation; however, in order for perovskite photovoltaics to become a commercial success, two key barriers must still be overcome: limited stability and environmental toxicity.

Preferred Qualifications: We are looking for a highly motivated student to take on this multidisciplinary project involving materials science, chemistry, and physics. Interested students are encouraged to reach out to Dr. Ubic. Experience with ceramic processing and/or thin-film synthesis would be an advantage but is not necessary.