

**Proposed Advisor: Dr. Chris Rudolf**

**Lab Location: NRL (Washington DC)**

**Research Description:** This basic and applied research opportunity invites the applicant to define a research program that investigates the process-structure-property relationships in multifunctional materials. Research areas currently focus on 1) Engineering Ceramics and MAX Phases for Ultra High Temperature Applications; 2) Development of a scientific framework for creating “intelligent material systems” with advanced waveform sensing and actuation capabilities by coupling experimentation with artificial neural networks; 3) 2D material growth and resulting enhancements to electronic and mechanical properties. The ideal candidate will have experience in mechanical-materials design & testing (e.g., stress-strain analysis; mechanical testing- tensile, bending, fatigue/fracture, Dynamic Mechanical Analysis; materials characterization of meso-/micro-structure, SEM, etc.). The candidate will have access to experts in corresponding material synthesis and characterization and a suite of equipment and instruments that will enable this work.

**Contact Information:**

Chris Rudolf, PhD  
Mechanical Research Engineer  
Multifunctional Materials Branch, Code 6354  
U.S. Naval Research Laboratory  
4555 Overlook Ave SW  
Washington, DC 20375

Phone: (202) 404-1731  
Email: Christopher.rudolf@nrl.navy.mil