Solid Solution and Isotope Effects on the Properties of Boride Ceramics

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- The project goal is to investigate the effects of carbon content, metal solid solution additions, and boron isotope ratio on thermal properties of diboride ceramics
- Hypotheses being investigated
  - Can C-free diborides be synthesized?
  - What impacts do carbon and other impurities have on thermal properties?
  - Can thermal properties be improved?
  - Why do solid solution additions improve oxidation resistance?
  - Can thermal properties and oxidation resistance be improved simultaneously?
- Significant progress has been made on understanding the thermal properties for very low carbon contents and the effect of added carbon on carbon content