

**THE PRODUCTION OF HfO_2 - HfB_2 COMPOSITE POWDER FROM
 HfO_2 , B_2O_3 AND Mg BY SOLID STATE REACTION
AND SUBSEQUENT ANNEALING**

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ABSTRACT

Hafnium dioxide-hafnium diboride (HfO_2 - HfB_2) composite powder was synthesized by high-energy ball milling and subsequent annealing of powder mixtures containing stoichiometric amounts of HfO_2 , B_2O_3 and Mg. Milling was carried out in various durations by using vibratory ball-mill with a ball-to-powder weight ratio of 10:1. The milled products were annealed in tube furnace with a heating and cooling rate of 10°C/min. under flowing Argon atmosphere. After annealing, the HfO_2 - HfB_2 composite powder is obtained in the presence of magnesium oxide (MgO). The milled and annealed products were analyzed by X-ray diffraction (XRD) technique and scanning electron microscope (SEM).

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