

Pioneer Synthesis and Characterization of Boron Containing Hard Materials

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Abstract : The first laboratory synthesis of hard materials such as diamond proceeded to attack of developing materials with high hardness to compete diamond. Boron rich solids are good candidates owing to their short interatomic bond lengths and strong covalent character. Boron containing hard material was synthesized by modified-microwave method under nitrogen atmosphere by using a fuel (glycine or urea), amorphous boron and/or boric acid in appropriate molar ratio. Characterizations were done by x-ray diffraction (XRD), fourier transform infrared (FTIR) spectroscopy, scanning electron microscopy/energy dispersive analyze (SEM/EDS), thermo gravimetric/differential thermal analysis (TG/DTA).

Keywords : boron containing materials, hard materials, microwave synthesis, powder X-ray diffraction

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