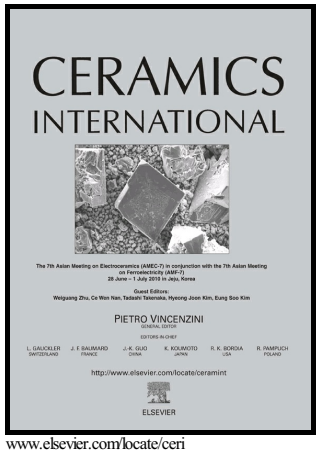

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Formation of BN from BCNO and the development of ordered BN structure: I. Synthesis of BCNO with various chemistries and degrees of crystallinity and reaction mechanism on BN formation

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Abstract

We synthesized BCNO compounds and investigated how the synthesis conditions impact i) BCNO formation, their chemistry and degree of crystallinity, and ii) BN formation from BCNO and its structural ordering. Heating boric acid (H_3BO_3) and melamine ($C_3H_6N_6$) mixture yields intermediate amorphous BCNO compound. Increasing the synthesis temperature, and H_3BO_3 to $C_3H_6N_6$ ratio promote BN formation and its structural ordering. We propose a possible reaction mechanism for BN formation from H_3BO_3 and $C_3H_6N_6$ mixture and we explain the

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