Tailoring structure and electric transport properties of the magnetic iron boron nitride nanoceramics.

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Novel magnetic iron boron nitride (Fe:BN) composite nanoceramics were fabricated by hot isostatic pressing. Their structure, morphology, magnetic and electronic transport properties were investigated by X-ray diffraction, scanning electron microscopy, magnetic and resistivity measurements. Experimental results show that structure and electric transport properties can be drastically changed for the samples synthesized at similar temperatures but different pressures, whereas their magnetic properties change just slightly. This study demonstrates the possibility of producing the Fe:BN nanoceramics exhibiting high magnetic induction with tunable structure and electronic transport properties.

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