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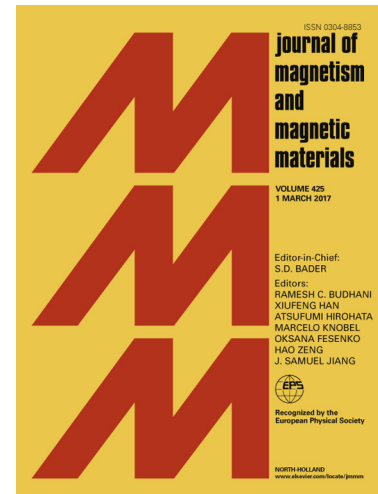
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# Effects of sintering temperature on properties of toroid cores using NiZnCu ferrites for power applications at >1 MHz

Junchang Liu<sup>a,b,c</sup>, Yunhui Mei<sup>a,b,c</sup>\*, Wen Liu<sup>a,b,c</sup>, Xin Li<sup>b,c</sup>, Feng Hou<sup>a,c</sup>, Guo-Quan Lu<sup>c,d</sup>

<sup>a</sup> Key Laboratory of Advanced Ceramics and Machining Technology of Ministry of Education, Tianjin University, Tianjin, 300350, China

<sup>b</sup> Tianjin Key Laboratory of Advanced Joining Technology, Tianjin University, Tianjin, 300350, China

<sup>c</sup> School of Materials Science and Engineering, Tianjin University, Tianjin, 300350, China

<sup>d</sup> Department of Materials Science and Engineering, Virginia Tech, Blacksburg, 24061, USA

\*Corresponding Author: yunhui@tju.edu.cn

## Abstract

The microstructures, magnetic and electronic performance of NiZnCu ferrites have been investigated at temperature from 850°C to 1000°C. X-ray diffraction (XRD) patterns showed that only single phase with spinel structure existed. Scanning electron microscopy (SEM) results showed that grain size increased with enhancement of sintering temperature and the most homogeneous, compact microstructure was obtained at 950°C. Magnetic properties measurements revealed that both complex permeability and saturation magnetization increased with increasing of sintering temperature. The initial permeability was approximately linear within the scope of 850°C to 1000°C as well as the resonance frequency decreased from 70 MHz to 30 MHz. Power loss density tests demonstrated that the core sintered at 950°C instead of the one sintered at 1000°C had the lower power loss density at both 5 mT and 10 mT and the higher inductance under a certain exciting direct current at 1 MHz. Also the inductance of the sample sintered at the higher temperature dropped faster than that at the lower temperature. The results showed that the core sintered at 950°C had better electrical performance and was suitable for wide usage.

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