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## ORIGINAL ARTICLE

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# Cold sintered $\text{LiMgPO}_4$ based composites for low temperature co-fired ceramic (LTCC) applications

Dawei Wang<sup>1</sup> | Jinrong Chen<sup>2</sup> | Ge Wang<sup>1</sup> | Zhilun Lu<sup>1</sup> | Shikuan Sun<sup>1</sup> | Jinglei Li<sup>3</sup> | Juan Jiang<sup>1,4</sup> | Di Zhou<sup>3</sup> | Kaixin Song<sup>1,2</sup> | Ian M. Reaney<sup>1</sup>

<sup>1</sup>Department of Materials Science and Engineering, University of Sheffield, Sheffield, UK

<sup>2</sup>College of Electronics Information, Hangzhou Dianzi University, Hangzhou, China

<sup>3</sup>Electronic Materials Research Laboratory, Key Laboratory of the Ministry of Education & International Center for Dielectric Research, School of Electronic Science and Engineering, Xi'an Jiaotong University, Xi'an, Shaanxi, China

<sup>4</sup>Faculty of Materials Science and Engineering, Hubei University, Wuhan, China

## Abstract

Cold sintered,  $\text{Li}_2\text{MoO}_4$ -based ceramics have recently been touted as candidates for electronic packaging and low temperature co-fired ceramic (LTCC) technology but  $\text{MoO}_3$  is an expensive and endangered raw material, not suited for large scale commercialization. Here, we present cold sintered temperature-stable composites based on  $\text{LiMgPO}_4$  (LMP) in which the Mo (and Li) concentration has been reduced, thereby significantly decreasing raw material costs. Optimum compositions, 0.5LMP-0.1CaTiO<sub>3</sub>-0.4K<sub>2</sub>MoO<sub>4</sub> (LMP-CTO-KMO), achieved 97% density at <300°C and 600 MPa for 60 minutes. Raman spectroscopy, X-ray diffraction, scanning electron microscopy, and energy dispersive X-ray mapping confirmed the microstructure of the sintered LMP-CTO-KMO composites. Diffraction and