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**Enhanced mechanical properties of 3 mol% Y₂O₃ stabilized tetragonal ZrO₂
incorporating tourmaline particles**

Yanjun Song ^{a, b}, Dongbin Zhu ^{a, b, c, *}, Jinsheng Liang ^{a, b, *}, Xiaoxu Zhang ^{a, b}

^a *Key Laboratory of Special Functional Materials for Ecological Environment and
Information, (Hebei University of Technology), Ministry of Education, Tianjin,
300130, P.R. China*

^b *Institute of Power Source and Ecomaterials Science, Hebei University of
Technology, Tianjin, 300130, P.R. China*

^c *School of Mechanical Engineering, Hebei University of Technology, Tianjin,
300130, P.R. China*

zhudongbin@hebut.edu.cn (D. Zhu)

liangjinsheng@hebut.edu.cn (J. Liang)

*Corresponding author. Tel & Fax: +86-022-60202388.

*Corresponding author. Tel& Fax: +86-022-60202575.

Abstract: The current study reports on the improvement of mechanical properties of 3 mol% Y₂O₃ stabilized tetragonal ZrO₂ (3Y-TZP) by introduction of tourmaline through ball milling and subsequent densification by pressureless sintering at 800, 1200, 1300, 1400°C. Findings demonstrate that no matter which sintering temperature the 3Y-TZP ceramic containing 2 wt% tourmaline reach a maximum value in flexural strength and fracture toughness as compared to other composite ceramics. As the tourmaline content is 2 wt% and the sintering temperature is 1300°C, the flexural strength and fracture toughness of the composite ceramics are the highest, increases of 36.2% and 36.6% over plain 3Y-TZP ceramic respectively. The unique microstructure

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