

Abstract Submitted
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Observations of ferroelastic switching by Raman spectroscopy in 18-percent ceria-stabilized zirconia AMY BOLON, Texas A&M University, JUAN MUNOZ SALDANA, Cinvestav-Quetetaro, MOLLY GENTLEMAN, Texas A&M University — Ferroelastic switching has been shown to be responsible for significant increases in the toughness of tetragonal zirconia ceramics. Observations of switching and measurements of coercive stress have generally been limited to TEM studies on large single crystals. In this study we show that it is possible to observe ferroelastic switching in 18 mole-percent ceria stabilized zirconia using polarized confocal Raman spectroscopy. Observations were made on bulk polycrystalline samples indented with a standard Vicker's indent and exhibited reorientation of crystal domains along the crack as well as near the crack tip. Coercive stress measurements were made by loading the samples uniaxially while making measurements of domain orientation.

Molly Gentleman
Texas A&M University

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