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Fracture toughness measurement in fused quartz using triangular chevron-notched micro-cantilevers

Goran Žagar^{}, Václav Pejchal, Martin G. Mueller, Lionel Michelet and Andreas Mortensen*

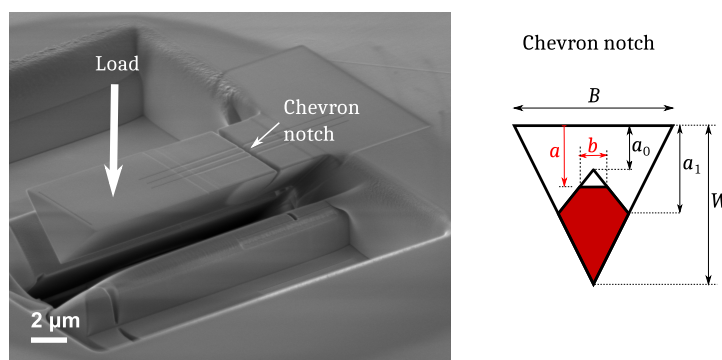
Laboratory of Mechanical Metallurgy, Institute of Materials, École Polytechnique Fédérale de Lausanne (EPFL), Station 12, CH-1015 Lausanne, Switzerland

^{*}Corresponding author: goran.zagar@epfl.ch

Abstract

We extend to flat surfaces the fracture toughness method presented in *Acta Materialia* vol. 86 (2015) p. 385 and measure in this manner the fracture toughness of fused quartz. Tests give $0.67 \pm 0.01 \text{ MPa m}^{1/2}$, which agrees with earlier microscopic and macroscopic test data for the fast fracture toughness of this material. Data show no signs of sub-critical crack growth; this observation is at variance with what one would expect from literature data on the phenomenon.

Graphical abstract



Keywords

Toughness, Focused Ion Beam (FIB), Finite element analysis, Fused quartz, Chevron notch