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Crack propagation in plasma sprayed wollastonite coatings

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Observation of the crack propagation in coatings is very important for the investigation on fracture mechanism. Fracture of plasma sprayed wollastonite coatings was observed in-situ using a Scanning Electron Microscope (SEM) during the Tapered Double Cantilever Beam (TDCB) specimens open. The fracture toughness was obtained subsequently. It is found that the initiation and crack propagation in coatings is discontinuous. The original pores in coatings can guide the cracking somewhat. The local principal stress also can influence the cracking propagation path. The lower fracture toughness of coatings, compared with the corresponding sintered materials, is partially affected by the crack propagating through the existing pores in coatings.

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