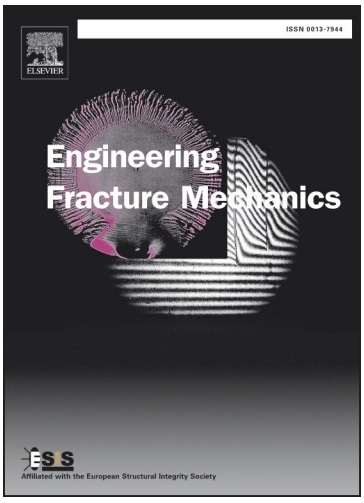


# Stress concentration of a crack-like spheroidal cavity lying on the prism plane of hexagonal crystals

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# Stress concentration of a crack-like spheroidal cavity lying on the prism plane of hexagonal crystals

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Abstract

Stress concentration factors around a crack-like spheroidal cavity lying on the prism plane of hexagonal crystals are determined by the equivalent inclusion method. The stress concentration factor is shown to be a product of two factors. One of the factors is purely geometric: the aspect ratio of the cavity and the other is characterized by the elastic properties of the material. The stress intensity factors of the related penny-shaped crack are deduced from the numerical results by reducing the aspect ratio of the cavity to zero. Results of several hexagonal single crystals including beryllium, graphite, magnesium, titanium and zinc are presented to show the influence of the material properties on the solution.

Key Words: stress concentration factor; stress intensity factor; equivalent inclusion method; penny-shaped crack; hexagonal crystal.