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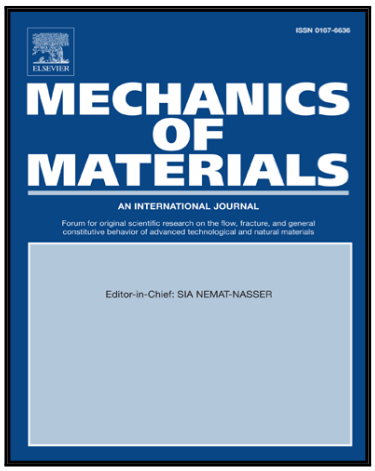

Crack growth and splitting failure of silicon nitride ceramic balls under cyclic pressure loads

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Highlights

- A HIP-Si_3N_4 ball is divided into two parts under a cyclic pressure load.
- Threshold limits of the initial K_{Imax} values of the pre-cracked Si_3N_4 balls increase with the increase of the stress ratios.
- It is difficult to predict whether cracks will grow or not based on their initial K_{Imax} values alone.
- Equivalent stress intensity factor range ΔK_{eq} can predict whether the crack will grow or not.
- The threshold limit of ΔK_{eq}, $\Delta K_{eq\ th}$ is 2.1 $MPam^{1/2}$.

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