

Abstract Submitted
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Tearing Fracture of Polymer Foam Sheet¹ ATSUSHI TAKEI, KO OKUMURA, Ochanomizu Univ. — We study crack propagation in a sheet of polymer foam. The sheet was stretched, and an initial crack was introduced to induce the crack propagation. When the sheet width is shorter than the crack length, the energy release rate (ERR) G of the system is independent of the crack length and constant during the propagation. Under the constant ERR condition, we find that the crack propagates at a constant speed. We observed the crack propagation for various values of ERR by changing the width of the sheet and the applied strain. Depending on values G of ERR, the measured velocity of the crack propagation was in the range from 0.01 mm/s to 10000 mm/s. We also found power laws between the velocity of the crack V and G . While in the literature the power law with the exponent close to three ($V \sim G^3$) has been reported, we found that polymer foam sheets have different exponents depending on physical characteristics of polymer foam. In this presentation, we report the experimental result and its analysis.

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