Polymer liquids fracture like solids

While fracture in brittle solids has been studied for centuries until today, there are few studies on fracture in polymer liquids. Recent developments in experimental techniques, especially the combination of controlled filament stretching rheometry and high speed imaging, have opened new windows into the detailed study of fracture processes for polymer liquids. High speed imaging shows that polymer liquids fracture like solids with initiation and propagation of an edge fracture. However, remarkable features such as highly reproducible critical stress, independent appearance of multiple fractures, and trumpet crack profiles, reveal mechanisms which are significantly different from solids.