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Fracture in Soft Materials

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Center of Soft Matter Physics and Its Applications

School of Chemistry

School of Physics and Nuclear Energy Engineering



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Fracture in Soft Materials

Abstract: Fracture is a phenomenon that is generally associated with solids. A key element in fracture theory is the so-called weakest link idea that fracture initiates from the largest pre-existing material imperfection. However, recent work has demonstrated that fracture can also happen in liquids, where surface tension will act to suppress such imperfections. Therefore, the weakest link idea does not seem immediately applicable to fracture in liquids. This presentation will review fracture in liquids and argue that fracture in soft liquids is a material property independent of pre-existing imperfections. The following questions then emerge: What is the material description needed to predict crack initiation, crack speed and crack shape in soft materials and liquids.