

Mechanical Instabilities in Soft Materials

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In recent years, soft materials have been extensively explored to make different structures for diverse functions. In many applications, soft materials undergo large deformation. In the seminar, I will discuss some intriguing mechanical instabilities in soft materials, associated with large deformations. Creasing instability in soft materials will be the first topic in my talk. Creases are ubiquitously observed in soft materials, while its scientific understanding is still in a nascent stage. I will present our recent studies on creasing instabilities in an elastomer or a gel under compression. Second, in many soft active materials, mechano-chemical or mechano-electrical coupling effect is very dramatic. I will talk about some possible mechanochemical and mechanoelectrical instabilities in soft active materials, such as temperature-sensitive hydrogel and dielectric elastomers.