

سمینار هفتگی ماده چگال نرم

**Journal Club: “Topology-Sensitive Microfluidic Filter for Polymers of Varying Stiffness”**

[**https://pubs.acs.org/doi/10.1021/acsmacrolett.7b00768**](https://pubs.acs.org/doi/10.1021/acsmacrolett.7b00768)

**Abstract**

**“**The separation of polymers based on their size, rigidity, and topology is an essential but also highly challenging task for nanoscience and engineering. Using hybrid molecular dynamics simulations that correctly take into account hydrodynamics, microfluidic channels have been designed for separating linear from ring polymers in dilute solutions. the transport velocity of the polymers is independent of their topology and rigidity when the channel walls are smooth and repulsive. However, when the walls are decorated with attractive spots arranged on lines parallel to the flow, ring polymers exhibit an order of magnitude higher transport velocity compared to linear chains. The spots induce a homeotropic-like reorientation of ring polymers close to walls leading to a tank treading motion along them, whereas linear chains are immobilized upon adsorption. This mechanism becomes more enhanced with increasing polymer rigidity. The presented technique holds thus promise for reliably separating nanoparticles based on their topology.”

**Mahtab Taghavi Nejad**

**Sharif University of Technology**

زمان: شنبه ۱۴۰۱/۱۲/۰۶ ساعت ۱۵:۳۰

مکان: اتاق ۵۱۲ دانشکده فیزیک دانشگاه صنعتی شریف - کلاس مجازی دکتر اجتهادی:

<https://vc.sharif.edu/ch/ejtehadi>