Colloquium

Drunk T. Tubifex Worms: How are active polymers different from real polymers?

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We propose a new 'active particle' system in which the particles are in fact polymer-like: living worms (Tubifex Tubifex, or 'sludge worms'). Their level of activity can be controlled by changing the temperature but also by adding small amounts of alcohol to make the worms drunk, which strongly reduces their motion. We then ask the question what the difference is between our living polymers and real polymers, for which the motion is due to thermal fluctuations.Performing classical rheology experiments on our living entangled polymer system, we find that the rheology is qualitatively similar to that of usual polymers, but, quantitatively their shear thinning is reduced by activity. I will also discuss phase separation by entanglement, and our attempts to perform hydrodynamic chromatography of these wormy polymers. For the latter, we gently push the worms through a maze, and find that drunk worms have more difficulty navigating through it: they take much more time to get out of the maze.

Monday, May 19, 2025 11:30am - 12:30pm
Raiffeisen Lecture Hall

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