



Seminar/Talk

Hidden Mechanisms in Self-Assembly: Pathway Competition, Surface Catalysis, and Phase Transitions

Alexander Dear

ETH

Host: Andela Saric

How do competing pathways, surface catalysis, and phase transitions shape selfassembly? In this seminar, I will first show how analytical solutions to rate laws enable mechanistic dissection of how different selfassembly pathways compete. These solutions reveal how reaction cascades can spread from one system to another via crosscatalysis and crossinhibition, providing insight into links between amyloid disorders. I will then show how applying precise thermodynamic reasoning to the largely experimentdriven field of protein aggregation exposes the central role of morphological defects in the selfreplication of amyloid fibrils and the influence of thirdparty surfaces in selfassembly more generally. Finally, I will show how combining analytical solutions with thermodynamic reasoning reveals hidden roles of phase transitions within protein selfassembly. Competition between fibrils and other phases leads to phenomena such as hysteresis and biochemical memory storage by reversible amyloids, but can also trigger neurodegenerative disease.

Thursday, January 15, 2026 11:00am - 12:00pm

Office Bldg West / Ground floor / Heinzel Seminar Room (I21.EG.101)



This invitation is valid as a ticket for the ISTA Shuttle from and to Heiligenstadt Station.

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