

Welcome



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UNIVERSITÀ  
DEGLI STUDI  
DI PADOVA

**Il Dipartimento di Scienze Chimiche accoglie il  
dott. Francesco Avanzini  
che terrà un seminario dal titolo:**

**Emergent Behaviors Out-of-Equilibrium: a Thermodynamic  
Perspective**

**Giovedì 29 giugno 2023, ore 17.15 Aula A, Dipartimento di Scienze  
Chimiche, Via Marzolo, 1**

*Chemical reactions driven out of equilibrium constitute the underlying mechanism of many complex processes in biosystems and synthetic chemistry. Self-assembly, molecular machines, chemical waves, phase separations, self-replication, and information processing provide some prototypical examples. In this talk, I first present how to formulate a nonequilibrium thermodynamic theory to characterize the energetics of these processes on rigorous grounds. Then I discuss how to build accurate and thermodynamically consistent reduced models of complex processes, involving numerous reactions and species (like in metabolism), by developing a circuit theory for chemical reactions.*

Il Direttore del Dipartimento

Michele Maggini