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Artificial Rheotaxis JEREMIE PALACCI, CSMR, NYU, USA, STEFANO SACANNA, Dpt of Chemistry, NYU, USA, ANAIS ABRAMIAN, ENS de Lyon, France, JEREMIE BARRAL, CNS, NYU, USA, KASEY HANSON, ALEXANDER GROSBERG, DAVID PINE, PAUL CHAIKIN, CSMR, NYU, USA
— Self-propelled micro-particles are intrinsically out-of-equilibrium. This renders their physics far richer than that of passive colloids while relaxing some thermodynamical constraints and give rise to the emergence of complex phenomena e.g. collective behavior, swarming... I will show that we can design microparticles with features usually observed for living microorganisms, the sensing of their environment or rheotaxis, the migration in a shear flow. We quantitatively describe the phenomenon and show that we can use a flow to control and assemble the particles. These self propelled particles realize a step forward in the design of advanced biomimetic systems.

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