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Self-assembly kinetics of DNA functionalised liposomes[1] BM MOGNETTI, Physics of Complex Systems and Statistical Mechanics, Université Libre de Bruxelles (ULB), Belgium, SJ BACHMANN , Physics of Complex Systems and Statistical Mechanics, ULB, Belgium, J KOTAR, L PAROLINI , BSS, Cavendish Lab, University of Cambridge, UK, M PETITZON , Physics of Complex Systems and Statistical Mechanics, ULB, Belgium, P CICUTA, L DI MICHELE, BSS, Cavendish Lab, University of Cambridge, UK — DNA has been largely used to program state-dependent interactions between functionalised Brownian units resulting in responsive systems featuring complex phase behaviours. In this talk I will show how DNA can also be used to control aggregation kinetics in systems of liposomes functionalised by three types of linkers that can simultaneously bind. In doing so, I will present a general coarse-graining strategy that allows calculating the adhesion free energy between pairs of compliant units functionalised by mobile binders. I will highlight the important role played by bilayer deformability and will calculate the free energy contribution due to the presence of complexes made by more than two binders. Finally we will demonstrate the importance of explicitly accounting for the kinetics underlying ligand-receptor reactions when studying large-scale self-assembly.

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