

## GRK 2516 Soft Matter Seminar

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Research seminar of the DFG Research Training Group GRK 2516 (https://grk2516.uni-mainz.de).

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## Elasticity and effective interactions of microgels in bulk and at liquid-liquid interfaces

Microgels are soft particles individually made by cross-linked polymer networks which are nowadays widely used as a colloidal model system because of their swelling properties and their responsivity to external control parameters such temperature or pH. In this talk I will briefly illustrate the protocol that we recently developed to synthesize microgels in-silico, providing a realistic description of the particles. I will then focus on the calculation of their elastic properties and of the effective interactions in bulk and at liquid-liquid interfaces and compare the results with the famous Hertzian model. While we find that the validity of such model in bulk is fairly limited[1], when microgels are adsorbed at interfaces, they effectively behave as 2D elastic disks. Such soft interactions are predicted to show a reentrant liquid-glass-liquid behavior at high densities in a range of experimentally accessible conditions, namely for small and loosely crosslinked microgels[2].

[1] L. Rovigatti, N. Gnan, A. Ninarello and EZ, Macromolecules (2019).

[2] F. Camerin, N. Gnan, J. Ruiz-Franco, A. Ninarello, L. Rovigatti and EZ, Phys. Rev. X (2020).

