



# The Physics of Soft and Biological Matter

## Relaxation of surface tension in the liquid-solid interfaces of Lennard-Jones liquids

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We have established the surface tension relaxation time in the liquid-solid interfaces of Lennard-Jones simple and complex liquids by means of direct measurements in molecular dynamics (MD) simulations. The main result is that the relaxation time is found to be independent of the molecular structures (the chain length) and viscosity of the liquids (at 70-fold change) used in our study and lies in such a range that in slow hydrodynamic motion the interfaces are expected to be at equilibrium. This has been also verified in the direct MD experiments on dynamic wetting, where the dynamic contact angle was observed. The implications of our results for the modelling of dynamic wetting processes and interpretation of dynamic contact angle data are discussed. In particular, we compare with the existing models and directly demonstrate the mechanism of dynamic contact angle generation at nanoscale.

