Postdoc: “Probing weak single- and multi-bond interactions”

In this project, the postdoctoral fellow will use a state-of-the-art optical tweezer/micropipette-based force probe setup to quantitatively study the interactions in a variety of weak-bond model systems based on microparticles, solid-supported lipid bilayers and synthetic ‘sticky ends’.

Weak yet specific bonds challenge our current fundamental physics understanding, while holding many exciting prospects for materials science. For example, nano-particles with specific binding groups tethered to their surfaces could self-assemble into functional structures, and interactions mediated by multiple weak bonds could give rise to novel ‘adaptive’ materials. The realization of such applications poses a major challenge though, as the physics of collections of weak bonds is poorly understood.

The goal of this research project is to quantitatively study weak single- and multi-bond interactions in highly customizable soft matter model systems that we construct in our own lab and that employ synthetic DNA constructs (so-called ‘sticky ends’) as model weak bonds. The postdoc will use a state-of-the-art force probe setup - that combines optical tweezer manipulation, micropipette aspiration, brightfield/RICM imaging and temperature control - to study various aspects of weak multi-bond interactions, as a function of the individual bond properties (e.g. strength, length, mobility) and the number of bonds that is formed between the surfaces.

Required qualifications & terms of employment
We are looking for outstanding experimentalists with a PhD in physics or a closely related field and with a strong drive to excel in a competitive international environment. The applicant should have affinity with quantitative (interaction) measurements. The position is intended as full-time (38 hrs/week, 12 months/year) appointment in the service of Foundation for Fundamental Research on Matter (FOM) for the duration of two years. AMOLF assists any new postdoc with housing and visa applications and compensates their transport costs.

Further information
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Send your application to:
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Quote vacancy 1111.16 and send your resume and a motivation letter on why you want to join the group (max. 1 page).