

Fully funded Ph.D. positions (4 years)

DNA Nanotechnology for Soft Matter: Force sensors for colloidal smart materials



Our interdisciplinary group works at the boundary between DNA nanotechnology and Nanophotonics for a wide variety of applications ranging from quantum optics to diagnostics. Recently we were awarded a prestigious SNF Sinergia grant for the project '**Programmable Self-Assembly of Colloids into Networks with an Embedded Optical Force Sensor**', an international collaboration between leading research groups from Fribourg (UniFR), Zurich (ETHZ) and New York (NYU). The goal is to develop novel colloidal materials by using DNA-functionalized particles for programmable self-assembly. Combining diverse expertise from multiple research groups we will study stress distribution, mechanical resilience, and rheological properties from the single bond level to the macroscopic scale.

The candidate will build upon recent advancements by the group to explore and implement strategies to DNA-functionalize solid particles and emulsion droplets and to incorporate optical force sensors to visualize and quantify relevant material properties at the nanoscale.

Your Profile:

- Masters or Diploma in Physics, Chemistry, Biotechnology, Engineering or related fields
- Outstanding academic achievements and relevant experimental research experience
- Understanding of nanophotonics and/or DNA nanotechnology
- Excellent communication skills and proficiency in English

We offer: Internationally competitive salaries (starting at 58'000 CHF/year for PhD students, including pension and social charges) that ensure an excellent standard of living. Work in an interdisciplinary, multicultural and dynamic environment with state-of-the-art technology and application relevant research questions. Collaborations, including planned research stays, with Prof. Brujic (NYC) and Prof. Vermant (Zurich).

Start Date: End of 2024/beginning of 2025 (Flexible)

Applications and inquiries: Please contact Prof. Guillermo Acuna, guillermo.acuna@unifr.ch

Deadline: 31st of October. Applications will be reviewed starting in September, apply as soon as possible.



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<https://sites.google.com/view/group-acuna/home>

