The Soft and Complex Matter Lab at Dept. of Physics NTNU (www.softcomlab.com) offers the following four summer-jobs for master students during the summer 2021. Each job will have a duration of 1 month, timing of beginning and ending the 1 month can be decided together with the contact persons below, or contact@softcomlab.com .

Summer-job 1:

Microfluidics devices come in many different sorts and geometries depending on the specific application of the device. In the Soft and Complex Matter Lab one of the devices we work with is a flow focusing device. This can be used to produce polymer microcapsules which can be used for different delivery purposes, e.g in medicine, food or oil industry. The work tasks of this summer job will include producing and testing such microfluidics devices, as well as improving their design, with possibilities for producing and characterizing microcapsules. Contact person: PhD candidate Konstanse Seljelid (konstanse.k.seljelid@ntnu.no).

Summer-job 2:

There are usually several smaller steps to perform and smaller contributions to include before final results are published in a publication. As an example of this kind of activity, a summer job is offered for design and production of sample cells and microscope stages (3D printed) as well as automation of micromanipulators (using stepper motors). Contact person: PhD candidate Osvaldo Trigueiro Neto (osvaldo.t.neto@ntnu.no)

Summer-job 3:

Atomic force microscopy (AFM) is the technique that allows imaging of nanoscale objects, down to atomic resolution. This project will be focused on imaging of 1 nm thin layers of vermiculite clay, prepared by different methods. In case of further interest, student will also prepare samples for AFM by chemical and physico-chemical approaches to obtain single nano-layers of vermiculite clay. Contact person: Postdoc Barbara Pacakova (barbara.pacakova@ntnu.no).

Summer-job 4:

Self-assembly is a process in which a disordered system of pre-existing components forms an organized structure or pattern. In the soft and complex matter lab, we work with self-assembly of graphene oxide with functionalized clay nanosheets, and both are examples of 2D materials. The self-assembly can produce new composites (heterostructure) to achieve dielectric interlayer/ substrates as a basis for novel graphene-based devices. The work tasks of this summer job will include to functionalization of nanosheets, development of self-assembly processes, and characterizing new composites using SEM/STEM in NTNU Nanolab and/or X-ray scattering (SAXS) in the Soft and Complex Matter Lab. Contact person PhD candidate Paulo Michels Brito (paulo.h.m.brito@ntnu.no)