Inventory of experimental and theoretical resources available for NanoSpace COST Action	
Country:	The Netherlands
Name of Institution/Laboratory:	FELIX Laboratory
Contact information (name, e-mail):	Piero Ferrari, piero.ferrariramirez@ru.nl
Website:	https://www.ru.nl/felix/
Short description **(max 0.5 page)** of available techniques (experiment or theory): If appropriate, please include 1 picture/figure and caption highlighting resources.	The molecular beam setup at FELIX is designed to measure far- and mid-infrared spectra of neutral species in cold environments, mimicking the conditions of the ISM. The technique of laser desorption or an oven source are used to evaporate neutral species, either initially in solid or liquid form. The evaporated molecules are merged into a supersonically expanding beam of He or Ar gas, introduced via a pulsed valve. Once injected, the molecules are internally cooled by collisions with the carrier gas. After collimation with a skimmer, the molecular beam is analysed by time-of-flight mass spectrometry. The uniqueness of this setup is its connection with the intense light of the free-electron laser FELIX, which can continuously be tuned in the far- and mid-infrared range, from 66 to 3600 cm^{-1}, providing pulse energies as high as 100 mJ. Therefore, molecules can be heated by resonantly exciting their vibrational modes selectively, and different schemes of infrared spectroscopy can be employed, such as ion-dip or infrared multiple photon dissociation spectroscopy. Moreover, the setup is equipped with two tunable dye lasers to cover the UV/visible range, a tunable OPO/OPA laser to study the mid- and near-infrared range, an ArF excimer laser (193 nm) and an Ar/Xe gas cell (118 nm) for direct ionization.
Sample/target description (e.g. gas, clusters, solid,…):	Molecular beams of neutral species, such as small clusters, PAHs, fullerenes, etc.
How to access to experimental/computational resources (e.g. through collaboration, user facility proposal calls,….):	FELIX is a user facility with beamtime applications running twice per year. If granted, access to FELIX is free of charge, and the experimental campaigns are performed in collaboration with me
References **(max 5)**:	

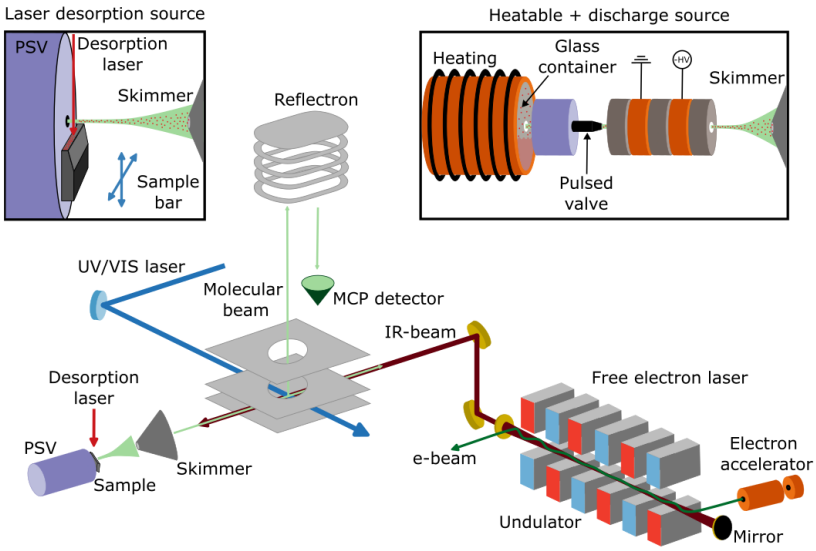


Figure 1. Schematic representation of the molecular beam setup at the FELIX Laboratory (Nijmegen, The Netherlands), including a laser desorption or an oven source, and a perpendicularly extracted reflectron time-of-flight mass spectrometer. UV/visible light ionizes a molecular beam of neutral species. Within the same interaction volume, the counter propagating infrared laser light of the free electron laser FELIX resonantly excites vibrational modes of the clusters.