

The new CISUP facilities for Earth Science at the University of Pisa

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Innovative research in Earth sciences, particularly in the fields of mineralogy and petrography, requires the combination of more analytical techniques capable of high-accuracy and/or high spatial resolution. Still, it is rare that a single institution has all the necessary equipment and expertise for a thorough characterization of geological samples. This inevitably hinders the possibility to achieve cutting-edge results in a relatively short time, limiting the national/international attractivity of the facilities and the competitiveness with foreigner research groups.

In 2018, the University of Pisa established the Center for Instrument Sharing (CISUP), an interdepartmental body devoted to the creation of a network of existing facilities and to the pondered acquisition of new large analytical instrumentation (<https://cisup.unipi.it/>). Through CISUP, the Earth science researchers of the University of Pisa can presently benefit of:

- a high-resolution field emission-scanning electron microscope (FE-SEM) operating under high, low and extended low vacuum modes with automated software for large area mapping;
- a 193 nm ArF excimer laser ablation system coupled to an inductively coupled plasma-mass spectrometer (LA-ICP-MS);
- a high-resolution field emission gun transmission electron microscope (HR-FEG-TEM) equipped with a large-area SDD EDS detector and state-of-the-art electron diffraction systems;
- a single-crystal X-ray diffractometer (SC-XRD), with double source (Mo and Cu $K\alpha$ radiation) and equipped with a detector having the largest active area so far available for lab-instruments.

Moreover, a focused-ion beam (FIB) SEM-FEG for high resolution imaging, EDS large area mapping system, 3D tomography, TEM and APT sample preparation and will be also installed in the next few months.

We believe that the recently installed and to-be-installed CISUP instrumentation will compose an analytical facility of national and international interest, able to valorize the consolidated tradition of the University of Pisa in the view of modern scientific challenges. This new facility will also favor the establishment of national and international scientific collaborations, possibly supporting the whole compartment of the Italian and European Earth sciences.