

The Solar Energy Research Center (CIESOL) was built as a single-store building using bioclimatic standards and its design is aimed at efficient energy use. To fulfil this goal, CIESOL applies solar energy technology for the heating and cooling systems, as well as solar photovoltaic electricity, to guarantee the building's self-sufficiency. CIESOL has all necessary infrastructures for using control systems to achieve thermal, visual and air quality comfort and energy efficiency in buildings. As for water treatment, CIESOL has advanced analytical equipment for characterizing complex effluents, microcontaminant analysis and identification of transformation products, solar pilot plants for photocatalytic removal of toxic substances and water disinfection, as well as synthesis of homo- and hetero-metal-polymers with photocatalytic activity. CIESOL engages in research and technology transfer activities in the field of solar energy applications concerning: organometallics and photochemistry, water treatment, environmental chemistry, photosynthesis and desalination, modelling and automatic control of solar systems, home automation for energy efficiency, as well as solar cooling and solar resources assessment.

Services currently offered by the infrastructure:

CIESOL has gradually increased the number as well as capabilities of its scientific and technological facilities. This extensive and advanced equipment, allows offering a quality and highly competitive service including, on one hand modelling and automatic control units of thermal energy storage system, hybrid power solar photovoltaic system and water cooling solar absorption cycle of the CIESOL building. On the other hand, six pilot plants for contaminated water treatment by solar photocatalysis equipped with radiometers and on-line measurement of main parameters, along with a membrane distillation using solar energy plant. Regarding off-line measurements of water and gas composition, advanced equipment comprises an AB SCIEX QTRAP 5500 LC/MS/MS for metabolite identification, detection and confirmation of low-level contaminants, a TripleTOF 5600+ System and a BRUKER 320MS Mass spectrometer triple quadrupole coupled to BRUKER 450GC gas chromatograph.

As for international collaborations, 50 mobility actions were carried out in the last three years, 40 research placements were at CIESOL by foreign researchers (most of them from Europe, followed by America and North Africa) and 10 stays abroad of CIESOL staff. This activity gives rise to a high proportion of scientific papers with international author's affiliation, that is 34 papers out of 72 since 2017 up to date (Scopus, March 13<sup>th</sup> 2018, search by affiliation 'CIESOL').