MS080.O06

The Indo-Italian cooperation at the elettra synchrotron radiation facility

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Indian research groups have been collaborating with researchers at the Italian Synchrotron radiation source Elettra since past two decades. The collaboration between Elettra and Indian research institutions is a part of a wider collaboration between the countries sponsored by the Department of Science and Technology, Government of India and the Italian Ministry for Foreign Affairs. The high standard of the collaboration in the field of synchrotron radiation was recognized in the joint statement by the prime ministers of both the countries, on the occasion of Italian prime minister's visit to India in February 2007. Statistics till 2015 indicate that the collaboration has led few hundred visits of Indian groups to Elettra (with an average of three scientists per visit) in the last 20 years and to the publication of more than 500 articles in peer-reviewed scientific journals. Till 2016, Elettra received around 959 experimental proposals from Indian research groups, corresponding to about 8% of the total: in third place, just after Italy and France (4873 and 1034 proposals respectively). This makes Elettra the most requested European national synchrotron radiation laboratory by Indian users.

This collaboration has been the earliest possibility for Indian scientists to access synchrotron facilities and played the most crucial role in building up the synchrotron community within India by making it available to even those who did not have any prior access or knowledge of synchrotron based techniques. As a part of this project, the community was nurtured to become competitive in preparing their proposals that were evaluated internationally to obtain synchrotron beam-time in various areas of research ranging from solid state and surface physics to nanotechnology, materials science and life sciences.

Great success of these activities prompted both sides to take a further significant step forward involving the development of two dedicated beamlines: a macromolecular and a high pressure X-ray diffraction facilities, respectively XRD2 and Xpress, under the partnership between Elettra and Indian Institute of Sciences, Bangalore. Both these beamlines share a superconducting wiggler as a high flux source. From the beginning of 2016 Xpress beamline started accepting proposals from external users. Till June 2016 sixteen approved proposals were performed of which 9 were from the Indian groups, with an average machine time of 12 shifts (4 days). Presently the SCW source is being upgraded and the full-time running of the two beamlines are programmed to start for the beginning of 2018. This milestone is going play a new chapter in the scientific collaborations involving Elettra and Indian research community.

Keywords: International cooperation, synchrotron, case study