

Report from ELETTRA

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ELETTRA is one of the first two third-generation, ultrahigh-brightness soft-x-ray sources. Commissioned late in 1993, it operated informally until July 1995 and was then officially opened to external groups through a peer-review process. The operating beamlines (May 1996) are six: SuperESCA, VUV Photoemission, ESCA Microscopy, Diffraction, Small-Angle X-ray Scattering (Austria) and Mammography (SYRMEP). Seven more are under development, most for commissioning in 1996-early 1997: ALOISA (Surface Diffraction), Gas-Phase Photoemission, Circular Polarization, Scanning Spectromicroscopy, Microfabrication, Materials Science (Czech Republic), BOSS (Slovenia). Several new proposals are under consideration. The facility delivers 5,000-6,000 beam-time hours per year with high reliability.

The operating beamlines are oversubscribed (average 329%, maximum almost 1000%). Their results provide a realistic assessment of the research impact of ultrahigh brightness - which is stronger than expected. Among the highlights: photoemission "chemical movies" by superESCA, primarily on oxidation processes; the surface-bulk lineshape difference and the study of quantum-well states by VUV Photoemission; structural information on the elongation factor T_u by Diffraction; the microchemical structure of semiconductor-metal-metal interfaces by ESCA Microscopy. These and other results provide improvement ideas and guidelines for future use of third-generation sources.