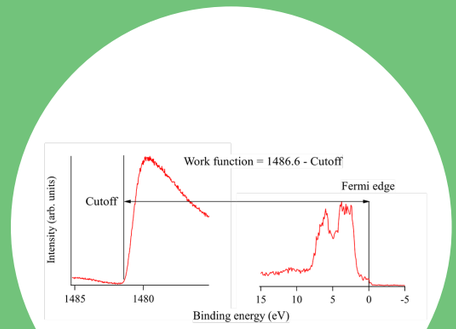
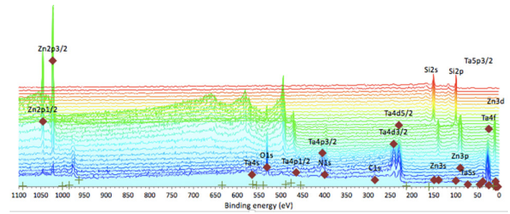
XPS

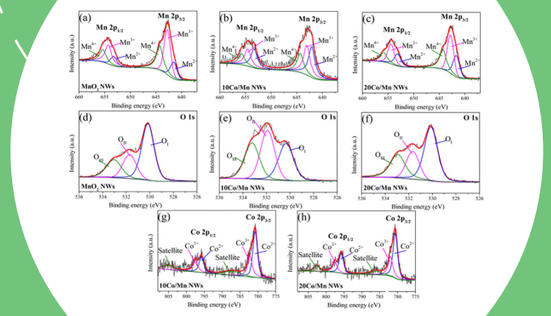
RESULT/APPLICATION



Valence and low-energy electron cutoff

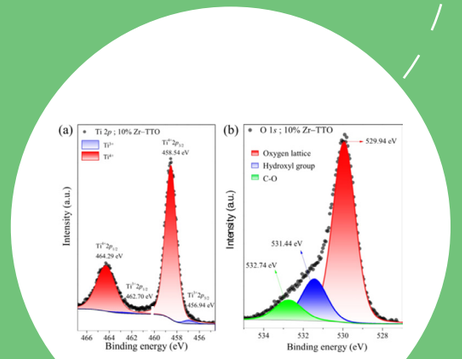


Depth profile on TaO/ZnN/Si substrate



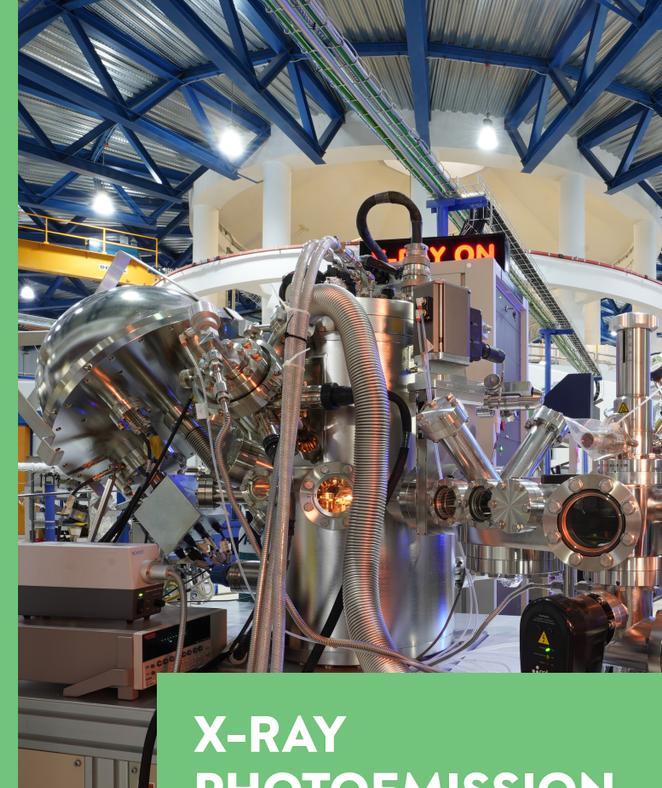
XPS spectra of Mn2p, O1s, and Co2p

I. Sereewatthanawut, C. Khajonvittayakul, N. Swadchaipong et al. Enhanced catalytic performance of MnO2 nanowires for soot combustion by cobalt incorporation. Mater. Adv., 2025, 6, 6416
DOI: 10.1039/D5MA00480B



XPS spectra of Ti2p and O1s

Mingmuang, Y., Chanlek, N., Takesada, M. et al. Mechanisms of enhanced performance in Zr4+/Ta5+ codoped rutile–TiO2 ceramics via broadband dielectric spectroscopy. Sci Rep 14, 23406 (2024). https://doi.org/10.1038/s41598-024-73732-x



X-RAY PHOTOEMISSION SPECTROSCOPY (XPS)

CONTACT

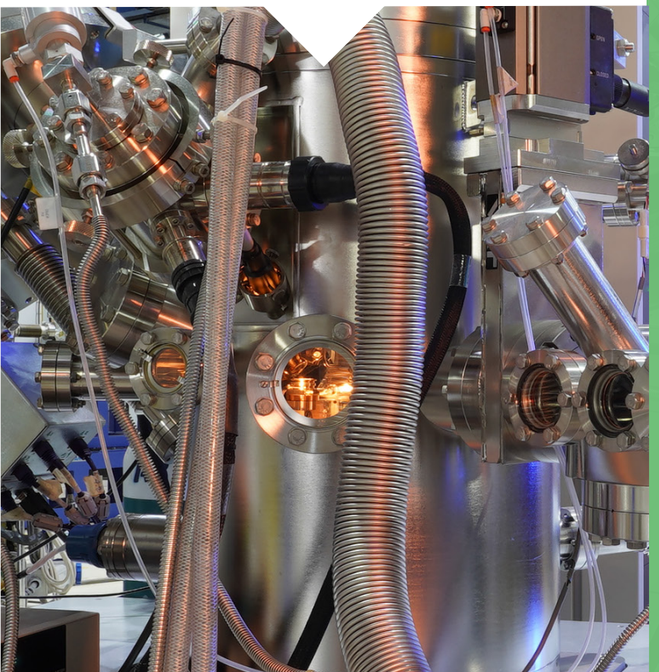
Surface Sciences Section
Synchrotron Light Research Institute (Public Organization)
Tel: 044 217 040 ext. 1482
E-mail: SSS@slri.or.th

www.slri.or.th

SYNCHROTRON LIGHT RESEARCH INSTITUTE
(PUBLIC ORGANIZATION)

PRINCIPLE INFORMATION

X-ray photoemission spectroscopy (XPS) probes the elemental composition and chemical states of materials by measuring the kinetic energy of electrons emitted upon X-ray irradiation. When core-level electrons absorb photons, they are ejected with energies that reflect both their binding energies and the local chemical environment. By analyzing these energies, XPS identifies elements, oxidation states, and electronic structures within the top few nanometers of the surface. The technique is highly surface-sensitive because photoelectrons have limited escape depths in solids.



TECHNICAL SPECIFICATION

Category	Specification
Beamline	BL3.1: XPS
Technique	X-ray Photoelectron Spectroscopy (XPS)
Photon Energy	1486.6 eV
Photon Flux (Full beam)	$1 \times 10^{11} – 1 \times 10^{13}$ ph/s
X-ray Beam Size	10 – 200 μm
Detector	Ulvac-PHI concentric hemispherical electron energy analyzer with 16-channel detector
Sample Environment	Ultra-high vacuum compatible Ion Gun Argon ion gun, 0.1 – 5 keV Charge Neutralizer Dual-beam charge neutralizer using low-energy electrons and argon ions

SDGs SUPPORT



Advancing energy storage through electronic structure analysis



Driving nano-electronics & semiconductor development at the micro-scale



Characterizing soil organic carbon for carbon sequestration research

XPS END STATION

