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Seminar Title	: RECLAIMING METAL VALUES FROM SECONDARY RESOURCES BY HYDROMETALLURGICAL PATHWAY
Speaker	: Swati Pramanik ( Rollno : 519ch2012)
Supervisor	: Prof. Basudeb Munshi
Venue	: New Seminar Hall, Chemical Engineering Department <a href="https://meet.google.com/bat-ddbm-rfy">https://meet.google.com/bat-ddbm-rfy</a>
Date and Time	: 23 Dec 2024 (10.00 AM)
Abstract	<p>: The rising demand of metals in the growing technical and digital market has accelerated the metal mining and metallic based commodities production in the recent years. The inescapable depletion of primary ores has elevated the alarm for exploration of new sources, development of enhanced extraction methodologies and to find an alternate option for the target metal. The exploration of abandoned materials as the new resource for good grade of metals has commanded challenging task. Proper reutilisation of the rejects can develop into potential secondary resource of metals to meet the future supply risk, at the same time conserve finite natural resources and reduce environmental problems.</p> <p>Hydrometallurgical treatment can serve a promising technology for reclamation of metal values from secondaries with efficient regulation of impurities at different stages of processes in an economical feasible way. In support of this, phosphor from e-waste, industrial mine tailings and waste leached residue have been explored to recover valuable metals i.e. Tb from phosphor Cu, Ni and Fe from mine tailing and synthesis of iron phosphate from waste leached residue by hydrometallurgical pathway to promote the concept of three R comprising recycle, reduce, and reuse. The metals recovered have also been developed into re-saleable products. In the developed methods, metals from the complex matrix present in the raw material were converted to their soluble phase for ease of separation by roasting and leaching. Metals thereafter from their aqueous phase were selectively separated by solvent extraction using different extractants like HDEHP, Cyanex 272 and LIX 84I. Selective and pure metals obtained after stripping loaded organic were synthesised to value-added products like Tb<sub>4</sub>O<sub>7</sub> and FePO<sub>4</sub> via precipitation. The chemical compositions of the leach liquors and solid compounds obtained at different stages were analysed by ICP-OES. The characterization study of the solid residue and final product was carried out using XRD and SEM-EDS.</p>