

学年	氏名	出身地	研究テーマ	研究概要	習得した分析技術等
D3	李 鵬飛	Liaoning Province, China	Preparation of Functionalized Magnetic Nanoparticles and Application in Recovery of Heavy Metals in Municipal Solid Waste Incineration Fly Ash	Municipal solid waste incineration fly ash is classified as a hazardous material owing to containing leachable heavy metals. But heavy metals, K, Na and Ca in fly ash can also be recycled as resources. In order to realize the recovery of heavy metals and other resources from fly ash, a leaching method combining NH <sub>3</sub> Cl extraction, Acid extraction and magnetic solid phase extraction has been proposed, and a magnetic adsorbent will be developed for the proposed extraction process. At the same time, the feasibility and economic analysis for this technology will be carried out.	SEM, XRD, XRF, Gaussian 16, Aspen V11
D3	Leeme Arther Baruti	Botswana	Management of landfill gas emissions	Methane is a potent greenhouse gas (GHG) and the anthropogenic emission of methane to the atmosphere contributes to climate change. Landfills account for a significant amount of methane emitted into the atmosphere. Therefore, it is important to understand how to identify and control methane emissions in existing landfills with no gas control systems in place. LandGEM mathematical model will be used to estimate the gas emissions and measurements taken with portable gas detector. Spatial distribution of methane emission will be forecast with GIS	LandGEM, portable gas detector, remote sensing, GIS

D2	Lilan Tang	Chongqing, China.	Application of advanced oxidation of persulfate and flotation method in harmless and recycling of MSWI fly ash	<p>Municipal solid waste incineration fly ash, which contains highly toxic organic contaminants and heavy metals, is classified as a hazardous material and is massively produced in Japan. However, the heavy metals (Zn, Cu, Pb, and Sb) and soluble salts (CaCl<sub>2</sub>, KCl, and NaCl) in fly ash are also important resources that should be recycled.</p> <p>Advanced oxidation of persulfate and flotation methods are two promising and suitable methods to achieve the purpose. Persulfate can be activated by alkali and heat and generates sulfate radicals (<math>\cdot\text{SO}_4^-</math>) and hydroxyl radicals (<math>\cdot\text{OH}</math>) which can effectively decompose the organic pollutants (such as PCDDs/Fs and PCBs).</p> <p>Flotation method is a well-known mineral processing technology which can separate the heavy metals from fly ash without using acid.</p>	SEM, XRD, XRF, GC-MS
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