



# RECUPERATION OF CRITICAL RAW MATERIALS USING REGENERABLE STRUCTURED SORBENTS

## from WASTE

industrial residues & wastes:  
inorganic sludges  
ashes  
slags  
construction & demolition  
shredder  
urban & landfill mines



## over VALUABLES

separation and recovery by  
physico-chemical (pre-)treatment  
technologies including physical  
separation and hydrometallurgy



## to PRODUCTS

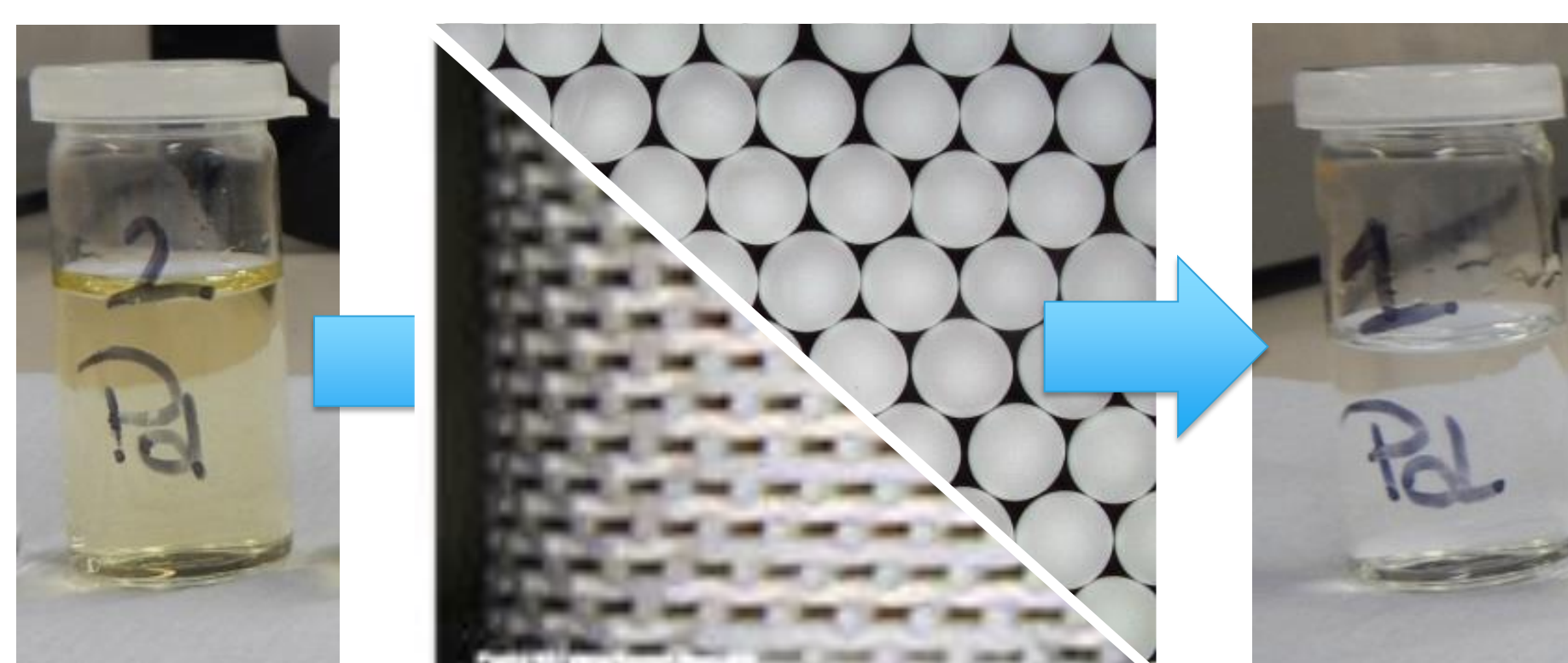
matrix valorisation into new  
products via sustainable binder  
and shaping technologies for  
residues.



Residues, side streams and even products produced in the chemical industry can contain valuable and/or hazardous metals or other valuables in low concentrations. They can originate from impurities in the starting materials, feed streams or leaching of the catalyst. An efficient technology to extract these impurities is the use of solid sorbent materials. It can recover/reduce the amount targeted material significantly with limited energy input.

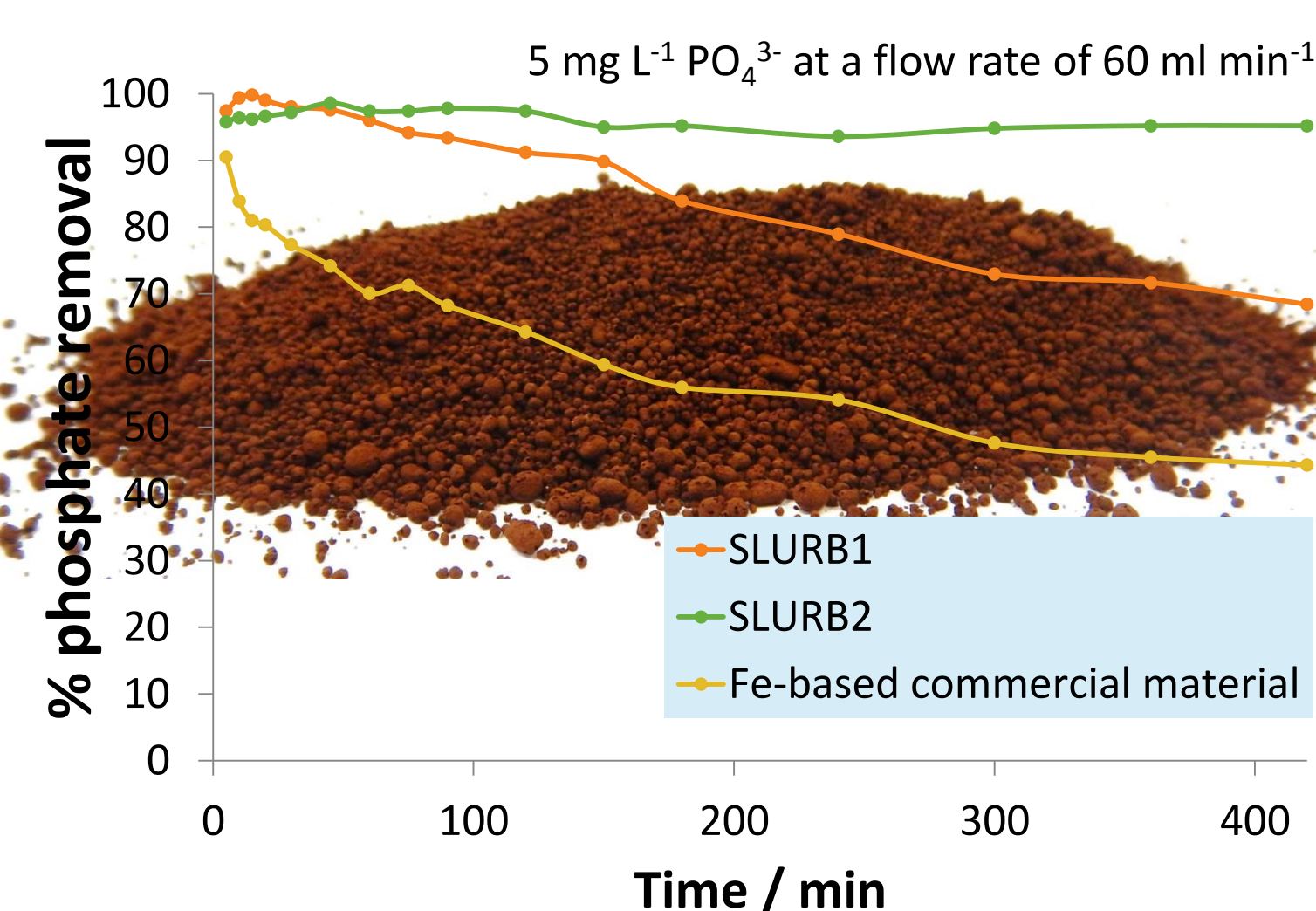
- Structured materials to improve ease-of-use, avoid clogging and limit pressure drop
- Tailored chemical groups to target specific ions/products
- Designed porosity to improve diffusion limitations and capacity
- Materials with high chemical resistance (pH, solvent, saline, ...), thermal and mechanical stability
- Regenerable materials which be re-used

e.g. Novel thermal and pH stable metal scavengers to recover PGM's with multiple functionalities \*



Recovery of dilute critical metals from dilute streams in extreme conditions (pH, T, pressure) using structures sorbents

## Upcycling of residues into cost-effective adsorption materials to remove contaminants



e.g. Granular phosphate filter materials from water treatment residue sludge



## Calls of interest

- CE-SC5-01-2018: Methods to remove hazardous substances and contaminants from secondary raw materials
- CE-SC5-06-2018: New technologies for the enhanced recovery of by-products
- CE-SC5-07-2018: Raw materials innovation for the circular economy: sustainable processing, reuse, recycling and recovery schemes
- CE-SC5-09-2018: Breakthrough concepts and solutions for sustainable exploration, mining and/or processing