

N°650 / PC

TOPIC(s) : Alternative solvents / Life cycle and environmental assessment

## SUPERMET project : Recovery of Precious Metals from Spent Catalysts by Supercritical CO<sub>2</sub> Extraction Assisted by Polymers

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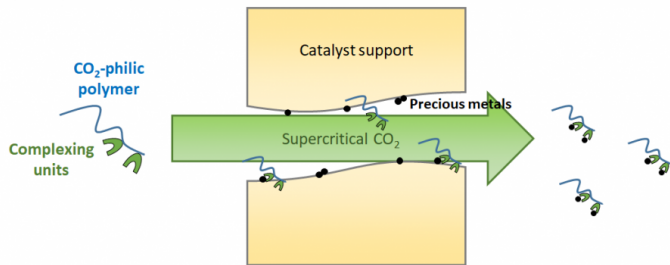
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### PURPOSE OF THE ABSTRACT

SUPERMET project proposes to explore an eco-friendly disruptive technology for the recycling of precious metals, especially palladium (Pd) and platinum (Pt), from spent catalysts, by extraction in supercritical CO<sub>2</sub> (scCO<sub>2</sub>) thanks to complexing polymers bringing the insoluble precious metals into the scCO<sub>2</sub> medium (Figure 1) [1]. The pyrometallurgical and hydrometallurgical state of the art techniques developed for the recovery of these metals are energy-intensive, destructive, and generate large volumes of toxic effluents. In contrast, SUPERMET project [2] will focus on metal-complexing polymers, soluble in supercritical CO<sub>2</sub>, synthesized by ICGM (France), and used by Fraunhofer ICT (Germany) as additives for the extraction by supercritical CO<sub>2</sub> of precious metals from spent catalysts (solid matrices) supplied by Heraeus (Germany). Physico-chemical analyses will be done at ICIA (Romania). Networking, watch on supercritical fluid technology and life cycle assessment will be organized with the support of IFS (France).

Acknowledgements: the authors thank ANR, ADEME, JUELICH/BMBF, UEFISCDI for financial support of this project in the frame of the ERA-MIN 2 joint call 2017 co-funded by the Horizon 2020 programme of the European Union.

## FIGURES



### FIGURE 1

Figure 1

Extraction of precious metals from supported catalysts by CO<sub>2</sub>-philic complexing polymers in supercritical CO<sub>2</sub>

### FIGURE 2

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### KEYWORDS

supercritical carbon dioxide | precious metal | catalyst | metal recycling

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### BIBLIOGRAPHY

[1] Li W.S.J., Gasc F., Pinot J., Causse J., Poirot H., Bouilhac C., Simonaire H., Barth D., Lacroix-Desmazes P., *The Journal of Supercritical Fluids* 2018, 138, 207–214.

[2] [www.supermetproject.eu](http://www.supermetproject.eu)