



ICFE-10

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INTERNATIONAL CONFERENCE ON f-ELEMENTS (ICFE-10)

Including rare earths (Y, Sc, lanthanides) and actinides

EPFL, September 3-6, 2018

LECOQ DE BOISBAUDRAN AWARD PLENARY LECTURE

Solvo-metallurgy for rare earths

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Solvometallurgy is the extraction of metals from ores, extractive waste, industrial process residues, production scrap and urban waste using non-aqueous solutions. Solvometallurgy differs from hydrometallurgy by the absence of a discrete water phase. In this lecture, the principles of solvometallurgy and its application to the extractive metallurgy of rare earths are presented. It is shown how rare earths can be recovered from end-of-life magnets and lamp phosphor waste by selective leaching with functionalised ionic liquids. Non-aqueous solvent extraction with two immiscible organic phases offers a great potential for the separation of mixtures of rare earths [1, 2].

References

[1] K. Binnemans, P.T. Jones, Solvometallurgy: An Emerging Branch of Extractive Metallurgy, *Journal of Sustainable Metallurgy* 3 (2017) 570-600.

[2] K. Binnemans, P.T. Jones, B. Blanpain, T. Van Gerven, Y. Pontikes, Towards zero-waste valorisation of rare-earth-containing industrial process residues: a critical review, *J. Clean. Prod.* 99 (2015) 17-38.