

## LIQUID-SOLID EXTRACTION OF LA(III) IN NITRATE MEDIUM BY XAD-1180 RESIN

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Lanthanum rare earth element is released into the environment especially by the gasoline producing industries and also when some household equipment is not recycled [1]. Lanthanum accumulates gradually in soils and waters, increasing lanthanum levels in humans and animals. Therefore, the recovery of lanthanum is considered essential for two reasons: the depollution of the environment and the valorization of this metal [2]. This research focuses on the sorption of lanthanum (III) by the XAD 1180 resin. The extraction technique used is the solid phase extraction (liquid - solid). The determination of lanthanum, before and after extraction, is performed by UV-Visible spectrophotometry at  $\lambda_{max} = 678$  nm specific to praseodymium-Arsenazo III complex. The kinetic study showed that the equilibrium time is 60 minutes. At this equilibrium time, the effects of various physicochemical parameters were studied, such as: initial pH of the aqueous phase, ionic strength by addition of different salts, stirring speed, initial praseodymium concentration and temperature. The variation of these parameters allowed the optimization of the sorption process. The results obtained showed that the extraction of praseodymium is optimal from weakly acidic media. The results of the initial praseodymium concentration effect show that the sorption capacity is  $6.24 \text{ mg g}^{-1}$ . The elution study of retained La(III) is carried out to regenerate the resin and recover La(III) in a minimum volume of solution by hydrochloric acid attack which gave the best elution efficiency (65%). In order to validate the performance of the resins we studied the kinetic aspect of sorption of metal ions in the solid phases, which we used throughout this work. The work is concluded by a study of metal desorption in order to regenerate the extractants for reuse.

**Keywords :** Environment, impregnation, Lupasol, Sorption.

### References

1. Esma, B., Omar, A., & Amine, D. M. (2014). Comparative study on lanthanum (III) sorption onto Lewatit TP 207 and Lewatit TP 260. *Journal of radioanalytical and nuclear chemistry*, 299 (1), 439-446.
2. Benmansour, Y., Abderrahim, O., Didi, M. A. (2018). Extraction du lanthanum (III) par le liquide ionique ascorbate. *Sciences & Technologie. A, sciences exactes*, 17-23.