

New Journal of Chemistry

Hydrophobic Polymerized Ionic Liquid for Trace Metal Solid Phase Extraction: Thallium Transfer from Hydrochloric Acid Media

Evgeny E. Tereshatov,^{a,*} Maria Boltoeva,^b Valérie Mazan,^{b,1} Colton Baley,^{a,c,2} Charles M. Folden III^{a,d}

^aCyclotron Institute, Texas A&M University, College Station, TX 77843 USA

^bUniversité de Strasbourg, CNRS, IPHC, UMR 7178, F-67000 Strasbourg, France

^cDepartment of Nuclear Engineering, Texas A&M University, College Station, TX 77843 USA

^dDepartment of Chemistry, Texas A&M University, College Station, TX 77843 USA

*E-mail address of the corresponding author: etereshatov@tamu.edu

¹Present address: Université de Strasbourg, CNRS, LIMA, UMR 7042, F-67087 Strasbourg, France

²Present address: University of Texas Health Science Center at San Antonio, San Antonio, TX 78229 USA

Supplementary Information

Figure S1 shows the adsorption isotherm for trivalent thallium extracted by the polymerized ionic liquid.

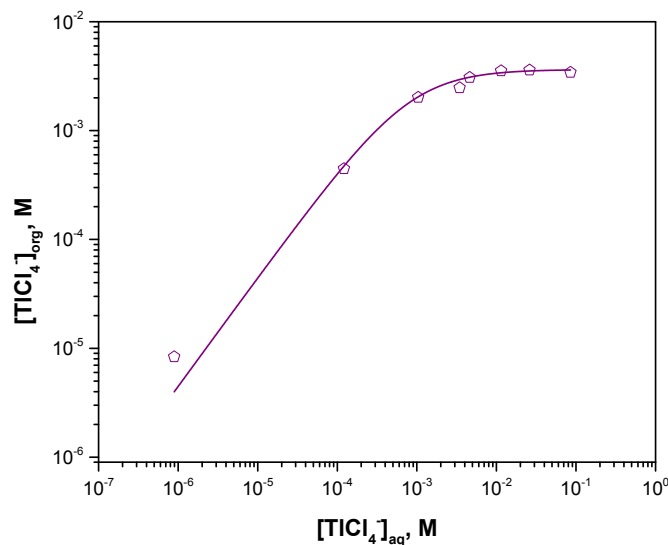


Fig. S1 Langmuir equation (adsorption isotherm) applied to experimental data of thallium species distributed between a 0.5 M HCl aqueous solution and the [PDDA][Tf₂N]_n ionic liquid. The solid line is drawn according to Eq. 23.

Figure S2 shows the experimental data used to determine a corresponding reaction order.

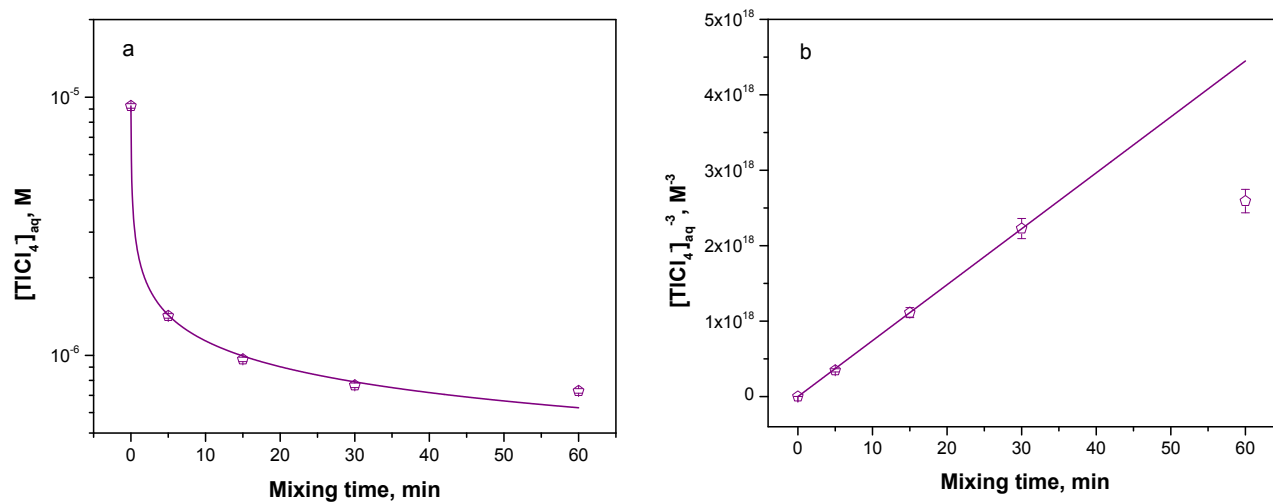


Fig. S2 Effect of mixing time on the concentration of Tl(III) remaining in the aqueous phase after extraction from 0.5 M HCl feed solution with the poly(ionic liquid) [PDDA][Tf₂N]_n: a) $C = f(t)$, b) $C^{-3} = f(t)$. The solid-to-liquid phase ratio is 0.05 g/mL. The initial concentration of Tl(III) in the aqueous phase is $9.3 \cdot 10^{-6}$ M. The solid lines are drawn according to Eq. 28 ($n = 4$).