Uniwersytet Wrocławski

Repozytorium

Plik pochodzi z repozytorium Wydziału Chemii Uniwersytetu Wrocławskiego

Octamethyl-octaundecylcyclo[8]pyrrole: a promising sulfate anion extractant.

Autorzy

L. R. Eller

Marcin Stępień

Christopher J. Fowler

Jeong Tae Lee

Jonathan L. Sessler

Bruce A. Moyer

Rok wydania

2007

Czasopismo

Journal of the American Chemical Society

Numer woluminu

129

Strony

11020-11021

DOI

10.1021/ja074568k

Kolekcja

Naukowa

Język

Angielski

Typ publikacji

Artykuł

Streszczenie

The diprotonated form of an organic-solubilized cyclo[8]pyrrole derivative, bearing eight undecyl chains on the β-pyrrolic positions, was found to extract sulfate anion effectively from neutral aqueous media into a toluene organic phase. The kinetics of sulfate anion exchange between the two phases were found to be exceedingly slow in the absence of the phase-transfer catalyst, Aliquat 336-nitrate (A336N), but appreciable in its presence. The bisnitrate anion bound form of this cyclo[8]pyrrole could be generated in situ by subjecting the toluene phase containing initially 0.5 mM of the sulfate anion bound form and 0.1 mM trioctylamine (TOA) to successive equilibrations with aqueous 0.1 M HNO_3 until sulfate was no longer detected in the aqueous phase. This bisnitrate complex, when studied as a 0.5 mM solution in toluene in the presence of 0.1 mM $(TOAH)^+(NO_3^-)$, was also found to be an effective extractant for sulfate anion. D_{SO4} values of 0.001 and 1000 were observed at 1 M $NaNO_3$(aq) and 0.3 mM $NaNO_3$(aq), respectively, and the logarithm of the conditional exchange constant, log( ), was calculated to be 4.9 ± 0.4. The present cyclo[8]pyrrole system is thus noteworthy as being the first synthetic receptor that displays a high selectivity for sulfate anion in the presence of excess nitrate under conditions of solvent extraction.

Adres publiczny

https://doi.org/10.1021/ja074568k

Strona internetowa wydawcy

https://www.acs.org/content/acs/en.html

Plik został wygenerowany dnia 2026-11-04 08:08:40

Adres w repozytorium https://old.chem.uni.wroc.pl/pl/repozytorium/6wsYvmV.