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PII: S0304-3894(18)30218-8
DOI: https://doi.org/10.1016/j.jhazmat.2018.03.057
Reference: HAZMAT 19277

To appear in: *Journal of Hazardous Materials*

Received date: 2-11-2017
Revised date: 22-3-2018
Accepted date: 28-3-2018

Please cite this article as: Gładysz-Płaska A, Majdan M, Tarasiuk B, Sternik D, Grabias E, The use of halloysite functionalized with isothiouronium salts as an organic/inorganic hybrid adsorbent for uranium(VI) ions removal, *Journal of Hazardous Materials* (2010), https://doi.org/10.1016/j.jhazmat.2018.03.057

The use of halloysite functionalized with isothiouronium salts as an organic/inorganic hybrid adsorbent for uranium(VI) ions removal

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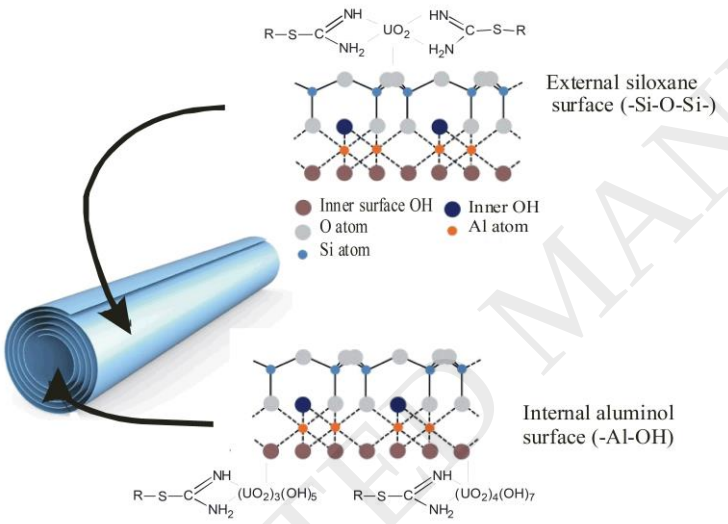
Graphical abstract



Highlights

- Halloysite sorbents with isothiouronium groups are synthesized for U(VI).
- The maximum sorption capacity of sorbent 157mg U/g.
- The sorption of U(VI) from acidic aqueous solutions with 12-20% efficiency.
- $[R\text{-}S\text{-}C(=NH)(NH_2)]_{n=1\text{-}2}(UO_2^{2+})$ complexes interacting with silanols.
- Oligomeric hydroxy complexes $(UO_2)_3(OH)_5^+$ and $(UO_2)_4(OH)_7^+$ in the sorbent interior.