

Accepted Manuscript

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PII: S1385-8947(18)30713-7
DOI: <https://doi.org/10.1016/j.cej.2018.04.140>
Reference: CEJ 18940

To appear in: *Chemical Engineering Journal*

Received Date: 18 March 2018
Revised Date: 19 April 2018
Accepted Date: 20 April 2018

Please cite this article as: Y. Li, L. Li, T. Chen, T. Duan, W. Yao, K. Zheng, L. Dai, W. Zhu, Bioassembly of Fungal Hypha/Graphene Oxide Aerogel as High Performance Adsorbents for U(VI) Removal, *Chemical Engineering Journal* (2018), doi: <https://doi.org/10.1016/j.cej.2018.04.140>

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Bioassembly of Fungal Hypha/Graphene Oxide Aerogel as High Performance Adsorbents for U(VI) Removal

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Abstract:

The highly efficient separation of radionuclides by the adsorbent with favorable ability is a compelling need with the development of the nuclear industry. In this paper, we chose fungus hypha as the skeleton, coated with a layer of two-dimensional graphene oxide sheets, and pyrolyzed as a fungal hyphae/graphene oxide aerogel for the application in uranium ions (U(VI)) removal. The macroscopically light fungus hypha and the reduced graphene oxide aerogel had a three-dimensional structure with an excellent capability on U(VI) removal (288.42 mg/g), attributed to its large specific surface area (894 m²/g) and abundant functional groups. In addition, the material also had a good recyclability through filtration and freeze-drying, respectively. We expected that the low cost and environmental-friendly aerogel would give some dominance in the field of the environment.

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