

Preparation of Expanded Chitin Foams and their Use in the Removal of Aqueous Copper

Blaine Berrington^{1,2}, Katelyn Alley^{1,4}, Kristopher Bosch^{1,3}, Kelli Thomas^{1,2}, Katie Hailer⁴, Dario Prieto-Centurion^{1,5}

¹Applied Surface Science Laboratory, Montana Technological University ²Department of Metallurgy and Materials Science, Montana Technological University ³Department of Environmental Engineering, Montana Technological University ⁴Department of Chemistry and Geochemistry, Montana Technological University ⁵Department of Mechanical Engineering, Montana Technological University

Corresponding Author

Dario Prieto-Centurion

dprieto@mtech.edu

Citation

Berrington, B., Alley, K., Bosch, K., Thomas, K., Hailer, K., Prieto-Centurion, D. Preparation of Expanded Chitin Foams and their Use in the Removal of Aqueous Copper. *J. Vis. Exp.* (), e62301, doi:10.3791/62301 (2021).

Date Published

February 27, 2021

DOI

10.3791/62301

URL

jove.com/video/62301

Materials

Name	Company	Catalog Number	Comments
Ammonium bicarbonate	Sigma-Aldrich	9830	NH ₄ HCO ₃ , ≥99.5 %
Chitin	Sigma-Aldrich	C7170	Pandalus borealis, practical grade
Colorimeter	Hanna Instruments	HI83399-01	Photometer for wastewater analysis
Copper High Range Checker	Hanna Instruments	HI702	Bicinchoninate colorimetric titration
Copper nitrate hydrate	Sigma-Aldrich	223395	Cu(NO ₃) ₂ · 2.5 H ₂ O, 98 %
Dimethylacetamide (DMAc)	Sigma-Aldrich	271012	Anhydrous, 99.8 %
IR Spectrophotometer	Thermo Nicolet	Nexus 670	Fitted with an ATR cell
Lithium chloride	Sigma-Aldrich	310468	LiCl, ≥99 %
N ₂ Physisorption Apparatus	Micromeritics	Tristar II	
Nitric acid	BDH	BDH7208-1	HNO ₃ , 0.1 N
Scanning electron microscope	Zeiss LEO	1430 VP	15 kV, secondary electron detector, 29-31 mm working distance
Sodium hydride	Sigma-Aldrich	223441	NaH, packed in mineral oil, 90 %
Thermogravimetric analyzer	TA Instruments	Q500	100 ml/min N ₂ , 10 °C/min to 800 °C
Water Purification System	Millipore	Milli-Q	Type A water (18 MΩ)
X-Ray Diffractometer	Rigaku	Ultima IV	Cu K-α radiation, 8.04 keV