

[Home](#) ▶ [All Journals](#) ▶ [Physical Sciences](#) ▶ [Separation Science and Technology](#)[▶ List of Issues](#) ▶ [Latest Articles](#) ▶ [Immobilization of deep eutectic solvent](#) Online

Separation Science and Technology >

Latest Articles

91 | 0

Views

0

CrossRef citations to date

0

Altmetric

Method

Immobilization of deep eutectic solvent in electrospun polyurethane nanofibers for application in the separation of rare earth elements

Veena C. Mali , Kuldeep Rajpurohit , Sabrina A. Shaikh ,

Ashok K. Pandey  & Hemlata K. Bagla 

Received 23 Oct 2024, Accepted 03 Apr 2025, Published online: 14 Apr 2025

 Cite this article <https://doi.org/10.1080/01496395.2025.2490962>

Sample our
Physical Sciences
Journals

>> **Sign in here** to start your access
to the latest two volumes for 14 days

 Full Article Figures & data References Citations Metrics Reprints & Permissions

Read this article

 Share

ABSTRACT

[Home](#) ▶ [All Journals](#) ▶ [Physical Sciences](#) ▶ [Separation Science and Technology](#)[▶ List of Issues](#) ▶ [Latest Articles](#) ▶ [Immobilization of deep eutectic solvent](#)

actic acid (LA) in a 1:2 mol proportion, was successfully immobilized on the PU nanofibers by electrospinning. After optimizing the electrospinning machine parameters, the fibers were made of PU with 10, 20, and 30 wt.% DES. All DES-PU nanofibers exhibited stability without any significant swelling or loss of materials during equilibrations. The extraction data of La, Ce, Nd and Eu in TOPO-LA DES loaded nanofibers as a function of HNO_3 concentration exhibited faster kinetics, a decrease in the extraction of a given lanthanide with an increase in the concentration of HNO_3 , and an increase in the extraction of La^{3+} to Eu^{3+} . It was observed that lanthanides could be completely deloaded with $> 2 \text{ M HNO}_3$ from TOPO-LA DES-loaded PU nanofibers. Among different leaching agents including hydrophilic DESs tested, HNO_3 was found to be the best leachant of REEs from Kerala sand. The REEs extraction from leach liquor (0.5 M HNO_3) showed that Th is extracted with high efficiency (95%) and Ce, La, and Nd are extracted with moderate efficiency (35–50%) in the presence of a large excess of Fe^{3+} ions. Th was found to sorb efficiently from 4 HNO_3 also.

KEYWORDS:[Polyurethane nanofibers](#) [deep eutectic solvent](#) [electrospinning](#) [separation](#)[rare earth elements](#)**Acknowledgments**

Veena C. Mali acknowledges the Department of Science & Technology, Government of India for financial support, vide sanction no. DST/WISE-PhD/CS/2023/23, under the 'WISE Fellowship for Ph.D.' program, to carry out this work. The authors thank SAIF, IIT-B, Mumbai for ICP-MS, ICP-AES

[Home](#) ▶ [All Journals](#) ▶ [Physical Sciences](#) ▶ [Separation Science and Technology](#)▶ [List of Issues](#) ▶ [Latest Articles](#) ▶ [Immobilization of deep eutectic solvent](#)

Sankar, Mr. Dharmendra Kumar Chandra and Mrs. Rajendra Bajda for

carrying out EDXRF analysis at the Gemological Institute of India, Mumbai.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Additional information

Funding

The work was supported by the Department of Science and Technology, Ministry of Science and Technology, India [DST/WISE-PhD/CS/2023/23].

[◀ Previous article](#)[View latest articles](#)[Next article ▶](#)

Log in via your institution

➤ [Access through your institution](#)

Log in to Taylor & Francis Online

➤ [Log in](#)

Restore content access

[Home](#) ▶ [All Journals](#) ▶ [Physical Sciences](#) ▶ [Separation Science and Technology](#)
▶ [List of Issues](#) ▶ [Latest Articles](#) ▶ [Immobilization of deep eutectic solvent ...](#)

Purchase options *

[Save for later](#)

PDF download + Online access

- 48 hours access to article PDF & online version
- Article PDF can be downloaded
- Article PDF can be printed

USD 64.00 [Add to cart](#)

Issue Purchase

- 30 days online access to complete issue
- Article PDFs can be downloaded
- Article PDFs can be printed

USD 845.00 [Add to cart](#)

* Local tax will be added as applicable

 [Share](#)

Related Research

[People also read](#)[Recommended articles](#)[Cited by](#)

[Emergency bioassay for uranium in direct urine using extraction chromatography and liquid scintillation technique](#) >

Supreetha Prabhu et al.

Separation Science and Technology

Published online: 17 Apr 2025

[Home](#) ▶ [All Journals](#) ▶ [Physical Sciences](#) ▶ [Separation Science and Technology](#)
▶ [List of Issues](#) ▶ [Latest Articles](#) ▶ [Immobilization of deep eutectic solvent ...](#)

[Home](#) ▶ [All Journals](#) ▶ [Physical Sciences](#) ▶ [Separation Science and Technology](#)
▶ [List of Issues](#) ▶ [Latest Articles](#) ▶ [Immobilization of deep eutectic solvent ...](#)

[Home](#) ▶ [All Journals](#) ▶ [Physical Sciences](#) ▶ [Separation Science and Technology](#)
▶ [List of Issues](#) ▶ [Latest Articles](#) ▶ [Immobilization of deep eutectic solvent ...](#)

[Authors](#)

[R&D professionals](#)

[Editors](#)

[Librarians](#)

[Societies](#)

[Opportunities](#)

[Reprints and e-prints](#)

[Advertising solutions](#)

[Accelerated publication](#)

[Corporate access solutions](#)

[Overview](#)

[Open journals](#)

[Open Select](#)

[Dove Medical Press](#)

[F1000Research](#)

[Help and information](#)

[Help and contact](#)

[Newsroom](#)

[All journals](#)

[Books](#)

Keep up to date

Register to receive personalised research and resources by email



Sign me up



Copyright © 2025 **Informa UK Limited** [Privacy policy](#) [Cookies](#)

[Terms & conditions](#) [Accessibility](#)

Registered in England & Wales No. 01072954

5 Howick Place | London | SW1P 1WG

