

Contents

Part I Introduction

1 Ionic Liquids in the Context of Rare Earth Separation and Utilization	3
Ji Chen and Jiangling Gao	

Part II Chemistry of Ionic Liquids with Rare Earth

2 Using Crystal Structures of Ionic Compounds to Explore Complexation and Extraction of Rare Earth Elements in Ionic Liquids	21
Steven P. Kelley, J. Seth Nuss, and Robin D. Rogers	

Part III Ionic Liquids for the Extraction and Separation of Rare Earth

3 Separating Rare-Earth Elements with Ionic Liquids	45
Nada Mehio, Huimin Luo, Chi-Linh Do-Thanh, Xiaoqi Sun, Yinglin Shen, Jason R. Bell, and Sheng Dai	
4 Ionic Liquid-Based Extraction and the Application to Liquid Membrane Separation of Rare Earth Metals	73
Fukiko Kubota, Jian Yang, and Masahiro Goto	
5 Application of Ionic Liquid Extractants on Rare Earth Green Separation	85
Hualing Yang, Ji Chen, Hongmin Cui, Wei Wang, Li Chen, and Yu Liu	

Part IV Electrodeposition of Rare Earth Metal in Ionic Liquids

6 Electrodeposition of Rare Earth Metal in Ionic Liquids	117
Masahiko Matsumiya	

Part V Utilization of Ionic Liquids on Rare Earth Materials

7 Ionic Liquids and Rare Earth Soft Luminescent Materials	157
Huanrong Li, Yige Wang, Tianren Wang, and Zhiqiang Li	
8 Photofunctional Rare Earth Materials Based on Ionic Liquids . . .	179
Bing Yan	
9 Ionic Liquid-Assisted Hydrothermal Synthesis of Rare Earth Luminescence Materials	207
Yanhua Song, Yuefeng Deng, Ji Chen, and Haifeng Zou	