

Contents

Preface.....xi

1. **Chelating Agents in the Environment.....1**
Bernd Nowack and Jeanne M. VanBriesen

Speciation

2. **Speciation of Chelating Agents and Principles for Global
Environmental Management.....20**
David R. Williams
3. **Stability Constants Data Sources: Critical Evaluation
and Application for Environmental Speciation.....50**
Konstantin I. Popov and Hans Wanner

Analytical Methods

4. **Analysis of Aminopolycarboxylates and Organophosphonates.....76**
Carsten K. Schmidt and Heinz-Jürgen Brauch
5. **Speciation of Aminopolycarboxylate and Aminophosphonate
Metal Complexes by AEX ICP-MS in Environmental Water
Samples.....108**
Adrian A. Ammann
6. **Analysis of Metal-Chelating Agent Complexes by Capillary
Electrophoresis.....121**
Scott C. Brooks
7. **Analysis of Biodegradation Intermediates of
Ethylenediaminetetraacetate and Nitrilotriacetate by High-
Performance Liquid Chromatography.....139**
Zhiwen Yuan and Jeanne M. VanBriesen

Biological Reactions

8. **Biodegradation of Chelating Agents: EDTA, DTPA, PDTA, NTA, and EDDS.....150**
Bernd Nörtemann
9. **Microbial Degradation of EDTA: New EDTA-Degrading Bacterial strains.....171**
Aidar D. Satroutdinov, Tatiana I. Chistyakova, Emiliya G. Dedyukhina, and Igor G. Minkevich
10. **Biodegradation of L-Glutamatediacetate by Mixed Cultures and an Isolate.....183**
Cornelis G. van Ginkel, Roy Geerts, and Phuong D. Nguyen
11. **Full-Scale Biological Treatment of Industrial Effluents Containing EDTA.....195**
Cornelis G. van Ginkel and Roy Geerts
12. **Effects of Chelating Agents on Trace Metal Speciation and Bioavailability.....204**
Kathrin. Wenger, Susan Tandy, and Bernd Nowack

Transport and Fate

13. **Distribution and Fate of Chelating Agents in the Environment.....226**
Mika E. T. Sillanpää
14. **Reactions of Phosphonic Acids at the Solid–Water Interface.....234**
Klaus Fischer
15. **Reaction of Phosphonates and Phosphinopolycarboxylate in the Subsurface.....248**
Amy T. Kan, Gongmin Fu, and Mason B. Tomson
16. **Glyphosate.....263**
Anne Louise Gimsing and Maria Afonso dos Santos
17. **Rates and Mechanisms of Co(II)EDTA²⁻ Interactions with Sediments from the Hanford Site.....278**
Melanie A. Mayes, X. L. Yin, M. N. Pace, and Philip M. Jardine

18. Coupled Hydrological and Geochemical Processes Influencing the Transport of Chelated Metals in the ORNL Vadose Zone and Groundwater.....	297
Melanie A. Mayes, Tonia L. Mehlhorn, and Philip M. Jardine	
19. Transport and Reactions of EDTA in Soils: Experiments and Modeling.....	316
Iris Vogeler and Thabo Thayalakumaran	
20. Overview of the European Risk Assessment on EDTA.....	336
Otto J. Grundler, Arnold T. M. van der Steen, and Joel Wilmot	
21. Theoretical Modeling and Reactivity of the Iron Chelates in Agronomic Conditions.....	348
Juan J. Lucena, Sonia García-Marco, Felipe Yunta, and Lourdes Hernández-Apaolaza	

Remediation Applications

22. Chelate-Enhanced Phytoremediation of Heavy Metal Contaminated Soil.....	366
Jing Song, Yong M. Luo, and Long H. Wu	
23. Soil Washing Using a Biodegradable Chelator.....	383
Domen Leštan and Boštjan Kos	
24. Enhancement of the Electrokinetic Remediation of Soil Contaminated with U(VI) by Chelating Agents.....	398
Konstantin I. Popov, Val G. Yachmenev, and Alexander Barinov	
25. Factors in the Selection of Chelating Agents for Extraction of Lead from Contaminated Soil: Effectiveness, Selectivity, and Recoverability.....	421
P. K. Andrew Hong and Weimin Jiang	

Indexes

Author Index.....	435
Subject Index.....	436