

CONTENTS

Series Preface	vii
Preface	ix
About the Editors	xi
List of Contributors	xv
1 Evolution of Concepts of Environmental Natural Nonliving Organic Matter	1
<i>M. H. B. Hayes</i>	
2 Formation Mechanisms of Humic Substances in the Environment	41
<i>P. M. Huang and A. G. Hardie</i>	
3 Organo-Clay Complexes in Soils and Sediments	111
<i>G. Chilom and J. A. Rice</i>	
4 The Effect of Organic Matter Amendment on Native Soil Humic Substances	147
<i>C. Plaza and N. Senesi</i>	
5 Carbon Sequestration in Soil	183
<i>M. De Nobili, M. Contin, and Y. Chen</i>	
6 Storage and Turnover of Organic Matter in Soil	219
<i>M. S. Torn, C. W. Swanston, C. Castanha, and S. E. Trumbore</i>	
7 Black Carbon and Thermally Altered (Pyrogenic) Organic Matter: Chemical Characteristics and the Role in the Environment	273
<i>H. Knicker</i>	
8 Biological Activities of Humic Substances	305
<i>S. Nardi, P. Carletti, D. Pizzeghello, and A. Muscolo</i>	

9	Role of Humic Substances in the Rhizosphere	341
	<i>R. Pinton, S. Cesco, and Z. Varanini</i>	
10	Dissolved Organic Matter (DOM) in Natural Environments	367
	<i>F. H. Frimmel and G. Abbt-Braun</i>	
11	Marine Organic Matter	407
	<i>E. M. Perdue and R. Benner</i>	
12	Natural Organic Matter in Atmospheric Particles	451
	<i>A. da Costa Duarte and R. M. B. Oliveira Duarte</i>	
13	Separation Technology as a Powerful Tool for Unfolding Molecular Complexity of Natural Organic Matter and Humic Substances	487
	<i>I. V. Perminova, A. I. Konstantinov, E. V. Kunenkov, A. Gaspar, P. Schmitt-Kopplin, N. Hertkorn, N. A. Kulikova, and K. Hatfield</i>	
14	Analytical Pyrolysis and Soft-Ionization Mass Spectrometry	539
	<i>P. Leinweber, G. Jandl, K.-U. Eckhardt, H.-R. Schulten, A. Schlichting, and D. Hofmann</i>	
15	Nuclear Magnetic Resonance Analysis of Natural Organic Matter	589
	<i>A. J. Simpson and M. J. Simpson</i>	
16	EPR, FTIR, Raman, UV-Visible Absorption, and Fluorescence Spectroscopies in Studies of NOM	651
	<i>L. Martin-Neto, D. M. B. P. Milori, W. T. L. Da Silva, and M. L. Simões</i>	
17	Synchrotron-Based Near-Edge X-Ray Spectroscopy of NOM in Soils and Sediments	729
	<i>J. Lehmann, D. Solomon, J. Brandes, H. Fleckenstein, C. Jacobson, and J. Thieme</i>	
18	Thermal Analysis for Advanced Characterization of Natural Nonliving Organic Materials	783
	<i>E. J. Leboeuf and L. Zhang</i>	
	Index	837