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Descrizione fisica	1 online resource (x, 434 pages) : digital, PDF file(s)
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Soggetti	Humic acid - Derivatives Cations Ligand binding (Biochemistry) - Mathematical models
Lingua di pubblicazione	Inglese
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Nota di bibliografia	Includes bibliographical references (p. [391]-421) and index.
Nota di contenuto	Natural organic matter and humic substances -- Isolation and classification of humic substances -- Formation and decomposition of humic substances -- Chemical and physical properties of humic substances -- Environmental concentrations of humic substances -- Humic substances -- accident or design? -- Environmental solution and surface chemistry -- Solutions and solutes -- Natural particulate matter -- Physico-chemical interactions in environmental aqueous systems -- Equilibrium and kinetics -- Chemical speciation -- Calculation of equilibrium concentrations -- Proton dissociation from weak acids -- Acids and bases -- Buffering -- Kinetics -- Diprotic acids -- Extension to higher polyprotic acids -- Electrostatic interactions among sites -- Proton dissociation from well-defined

polymers -- Proton dissociation from humic substances -- Metal-ligand interactions -- Coordination -- Chemical equilibria involving metal ions, protons and simple weak acid ligands -- Multisite ligands -- Electrostatic interactions -- Results with well-defined macromolecules -- Methods for measuring cation binding by humic substances -- The humic sample -- Determination of proton binding by potentiometry -- Analytical determination of acid group contents -- Direct measurement of equilibrium metal binding -- principles -- Separation methods to quantify equilibrium metal binding -- Competition methods -- Electrochemical techniques -- Spectroscopic methods -- Measurement of the kinetics of metal-humic interactions.

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#### Sommario/riassunto

Humic substances are highly-abundant organic compounds formed in soils and sediments by the decay of dead plants, microbes and animals. This book focuses on the important binding properties of these compounds which regulate the chemical reactivity and bioavailability of hydrogen and metal ions in the natural environment. Topics covered include the physico-chemical properties of humic matter and interactions of protons and metal cations with weak acids and macromolecules. Experimental laboratory methods are also discussed, together with mathematical modelling. Finally the author looks at how the results of this research can be used to interpret environmental phenomena in soils, waters and sediments. This comprehensive account of cation binding by humic matter is a valuable resource for advanced undergraduate and graduate students, environmental scientists, ecologists and geochemists.

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