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Nota di contenuto	Foreword. -- Preface. -- Acknowledgments. -- 1. Electromagnetic Wave Propagation. -- 1.1. Properties of Plane Electromagnetic Wave. -- 1.2. Radiant Continuous Aperture. -- 1.3. General Characteristics of Antennas. -- 1.4. Free-Space Loss and Electromagnetic Field Strength. -- 1.5. Reflector and Passive Repeater. -- 1.6. Model of Propagation. -- 1.7. Reflection and Refraction. -- 1.8. Influence of Atmosphere. -- 1.9. Propagation by Diffraction. -- 1.10. Attenuation by Atmospheric Gases. -- 1.11. Attenuation and Depolarization by Hydrometeors. -- 1.12. Influence of Ionosphere. -- 1.13. Thermal Radiation. -- 1.14. Probability Distributions. -- 2. Principles of Digital Communication Systems. -- 2.1. Signal Processing. -- 2.2. Thermal Noise. -- 2.3. Digital Communication Systems Design. -- 3. Microwave Line-of-Sight Systems. -- 3.1. Engineering of Line-of-Sight Systems. -- 3.2. Design of Line-of-Sight Microwave Radio Link: Interferometric Method. -- 3.3. Link Budget. -- 3.4. Methods of Prediction. -- 3.5. Protection against Jamming. -- 3.6. Frequency Reuse Techniques. -- 3.7. Comparison

between Various Diversity Techniques. -- 3.8. Availability of Microwave Line-of-Sight Systems. -- 4. Microwave Transhorizon Systems. -- 4.1. Engineering of Transhorizon Systems. -- 4.2. Method of Prediction. -- 4.3. Link Budget. -- 4.4. Examples of Transhorizon Links. -- 4.5. Other Models of Prediction. -- 4.6. Total Availability of Troposcatter Links. -- 5. Satellite Communications. -- 5.1. Space Geometry of Satellite Systems. -- 5.2. Configuration of Satellite Communication System. -- 5.3. Link Budget. -- 5.4. Method of Prediction. -- References. -- Index.

Sommario/riassunto

Everything readers need to implement and support a wireless point-to-point communications environment In order to cope with the tremendous explosion of the telecommunications market, the field of wireless communications has greatly expanded in the past fifty years, especially in the domains of microwave radio systems including line-of-sight, satellites, and tropospheric-scatter. Now, Microwave Engineering: Land & Space Radio- communications answers the growing worldwide demand for an authoritative book on this important and emerging subject area. In five succinct chapters, the book introduces students and practicing engineers to the main propagation phenomena that are encountered and that must be considered in the design and planning for any given system type and frequency of operation: . Electromagnetic wave propagation-An introduction to the fundamentaltheory of radiation and propagation of electromagnetic waves, polarization, antenna properties, free space attenuation, atmospheric refractivity, diffraction, reflection, multipath and scattering mechanisms, hydrometeor effects, and probability distributions . Principles of digital communication systems-Modulation techniques, signal processing, error probability, spectral characteristics, spectrum efficiency, thermal noise, intermodulation, jamming, and interference . Microwave line-of-sight systems-Path profile, flat fading and frequency-selective fading, interferometric method for space and frequency diversity techniques, International Standards and ITU Recommendations, optimization of the frequency-plan resource, link budget, quality, reliability, and availability . Microwave transhorizon systems-Design of beyond-the-horizon communication systems, properties of scattering and diffraction modes, multipath statistical relations, long-term and short-term field strength variations, quality of service, optimization of antenna alignment, and experimental analysis of various diversity and combining methods . Satellite communications-Design of satellite communications systems, orbital parameters, Earth-satellite geometry, uplink and downlink budgets for both space and Earth segments, and total system noise temperature Microwave Engineering: Land & Space Radiocommunications is suitable for engineers involved in wireless telecommunications, as well as for students and members of various seminars and workshops.

2. Record Nr. UNINA9910824591503321

Titolo	Polyoxometalate chemistry : some recent trends / / editor, Francis Secheresse, Universite de Versailles-St. Quentin, France
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Nota di contenuto	COLOR PLATE 36 Chapter 1 Polyoxometalate-Protected Metal Nanoparticles: Synthesis, Structure and Catalysis Yifeng Wang and Ira A. Weinstock; 1. Introduction; 2. Synthesis of Polyoxometalate Stabilized Metal(0) Nanoparticles; 2.1. Control over shape and size; 2.2. Ir and Ru nanoparticles by H2 reduction; 2.3. Reactions of metal salts with reduced polyoxometalate anions; 2.3.1. Synthesis of nanoparticles; 2.3.2 Synthesis of complex nanostructures; 2.4. Ligand-exchange reactions; 3. Structures of Inorganic Cluster Anions Stabilized Nanoparticles 3.1. Evidence for the stabilization of metal(0) nanoparticles by polyoxometalates 3.2. Direct imaging of POM-ligand monolayers by cryo-TEM; 3.3. Electric double layer of a polyoxometalate-stabilized nanoparticle; 4. Application of POM-stabilized Au NPs in Catalysis; 4.1. Hydrogenation reactions using POM-stabilized metal NPs; 4.2. Molecular oxygen activation reactions for organic synthesis; 4.3. Other organic reactions catalyzed by polyoxometalate-stabilized metal nanoparticles; 4.4. Electrocatalysis; 5. Closing Comments; References Chapter 2 When Giants Meet Dwarves in the Same Pond - Unique Solution Physical Chemistry Opportunities Offered by Polyoxometalate Macroions Dong Li, Panchao Yin and Tianbo Liu 1. Introduction and Retrospection; 1.1. Derivation of the Debye-Huckel's limiting theory5;

1.2. General features of the DLVO theory; 1.2.1. DLVO potential and the primary and secondary minima; 1.2.2. Limitations of the DLVO theory; 2. Characterization of Macroion Solution Behaviors; 2.1. Polyoxometalates (POMs) type macroanions; 2.1.1. Characterization of the self-assembly of POM macroanions in dilute solutions
2.1.2. The driving forces that responsible for the unexpected self-assembly of macroanions 2.1.2.1. Van der Waals attractions; 2.1.2.2. Hydrogen bonding; 2.1.2.3. Counterions mediated attractions; a) Interactions between discrete macroions and counterions; b) Effect of surface charge density; c) Effect of counterion valence state and counterion hydrated size; d) Effect of ionic strength; 2.1.2.4. Solvent effect; 2.1.3. Kinetics of the blackberry formation; 2.1.3.1. Long equilibrium time; 2.1.3.2. High activation energy; 2.1.3.3. Slow nucleation and fast aggregation
2.2. Self-assembly of macrocations

Sommario/riassunto

The book highlights recent prominent results in the domain of the synthesis of new polyoxometalates with a specific attention to polyoxothioanions, and provides some novelties and perspectives in selected domains such as magnetism, luminescence and nanochemistry, and macroions self-assembly in solutions. The case of "one-pot" syntheses often used and reported in POMs synthesis is studied in terms of more complex solution speciation processes related to highly dynamical situation connected to factors such as pH, ionic strength, reaction time, temperature, counterion nature, concentration of sta