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Nota di contenuto	Part I. Electrochemical energy storage and conversion -- 1. Electrochemical energy storage and conversion devices – Types and importance -- 2. Materials degradation in electrochemical energy storage and conversion devices – An overview -- Part II. Fuel cells -- 3. Corrosion and its mitigation approaches of metallic bipolar plates -- 4. Carbon corrosion in fuel cells- Fundamentals and mitigation approaches -- 5. Platinum dissolution and ionomer redistribution/degradation in fuel cells – An evaluation -- 6. Performance degradation of PEM fuel cells during startup-shutdown cycles – A case study -- Part III. Supercapacitors -- 7. Corrosion and degradation in supercapacitors and mitigation approaches -- 8. Carbon

corrosion in supercapacitors -- Part IV. Batteries -- 9. Corrosion in Pb-acid batteries – Recent developments -- 10. Corrosion in nickel-metal hydride (Ni-MH) batteries– Recent developments -- 11. Corrosion of current collectors in metal-ion batteries -- 12. Novel corrosion-resistant nonmetallic current collectors for aqueous batteries -- 13. CEI and SEI formation in Li-ion batteries -- 14. Corrosion and degradation in aqueous Zn-ion batteries -- 15. Novel electrolytes and electrolyte additives for metal-ion and metal-air batteries – A case study of acetonitrile and LiCTFSI -- 16. Degradation in metal-air batteries - Recent developments -- 17. Anode corrosion and its mitigation in metal-air batteries - I (Li/Na/Al/Mg-air) -- 18. Anode corrosion and mitigation in metal-air batteries – II (Zn-air) -- 19. Electrolyte additives/corrosion inhibitors for anode corrosion in metal-air batteries -- 20. Approaches to construct high-performance Mg-air batteries -- 21. Corrosion and its control in redox-flow batteries.

Sommario/riassunto

This book discusses research and development on various degradation types and their mitigation approaches in electrochemical energy storage and conversion (EESC) devices, such as fuel cells, batteries, and supercapacitors, essential to realizing carbon neutrality and a sustainable energy economy. Corrosion and degradation of the components remains a major threat to EESC devices' long-term durability, and at present there is an insufficient number of book-length treatments of this topic. This volume brings together the most up-to-date findings from the research literature.