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Sommario/riassunto	This book highlights an in-depth examination of metal nanoparticles as transformative agents in colorimetric sensing technology. Targeted toward researchers, practitioners, and students in nanotechnology, analytical chemistry, and related fields, this book consolidates the latest advancements in nanoparticle-based colorimetric systems for highly sensitive and selective detection. With chapters dedicated to gold, copper, iron, silver, platinum, and palladium nanoparticles, it explores their unique optical and catalytic properties and their role in diverse applications, from biosensing and environmental monitoring to medical diagnostics and food safety.