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This book consists of 12 original research articles and one comprehensive review from invited chemists from around the world covering different fields of chemistry. The article on analytical chemistry features the analysis of highly polar metabolites in biological fluids, the determination of non-steroidal anti-inflammatory drugs with a gas chromatography coupled to ion trap mass spectrometry, and the synthesis of MoS₂ nanostructures for the production of near-infrared photodetectors. The environmental chemistry articles include discussions on weekly and longitudinal elemental variability in hair samples, use of bottom ash as a stabilizing agent, the removal of phosphorus from the effluent of a paper company, and the chemistry and consequences of arsenic contamination of groundwater. Polymer/coating chemistry coverage includes the incorporation of superabsorbent polymers into cementitious-based composite materials, the use of licorice root extracts for edible coatings and postharvest quality improvement, and the use of mucin-grafted polyethylene glycol-based micro- for the oral delivery of insulin. The reported research on nanomaterials chemistry covers the synthesis of ZnO-doped ceria nanorods made up of CeO₂/ZnO mixed oxides, and the production of carbon fiber-reinforced plastic bonded joints with novel carbon nanotube (CNT) adhesive films. A final paper on flavonol chemistry utilizes LC-MS/MS to investigate the stability of four common types of dietary flavonols.



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