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Nota di contenuto	ADDITIVES IN POLYMERS Industrial Analysis and Applications; Contents; FOREWORD; PREFACE; ABOUT THE AUTHOR; ACKNOWLEDGEMENTS; CHAPTER 1 Introduction; 1.1 Additives; 1.1.1 Additive functionality; 1.2 Plastics formulations; 1.2.1 Supply forms; 1.2.2 Additive delivery; 1.3 Economic impact of polymer additives; 1.4 Analysis of plastics; 1.4.1 Regulations and standardisation; 1.4.2 Prior art; 1.4.3 Databases; 1.4.4 Scope; 1.4.5 Chapter overview; 1.5 Bibliography; 1.5.1 Plastics additives; 1.5.2 Processing technologies; 1.5.3 Instrumental analysis; 1.5.4 Polymer analysis 1.5.5 Polymer/additive analysis 1.6 References; CHAPTER 2 Deformulation Principles; 2.1 Polymer identification; 2.2 Additive analysis of rubbers: 'Best Practice'; 2.3 Polymer extract analysis; 2.4 In situ polymer/additive analysis; 2.5 Class-specific polymer/additive analysis; 2.6 Bibliography; 2.6.1 Polymer identification; 2.6.2 Deformulation of rubbers; 2.6.3 Deformulation of polymers; 2.7 References; CHAPTER 3 Sample Preparation Perspectives; 3.1 Solvents; 3.1.1 Polymer solubility criteria; 3.1.2 Solubility parameters; 3.1.3 Polymer solutions; 3.2 Extraction strategy 3.3 Conventional extraction technologies 3.3.1 Liquid-liquid extraction;

3.3.2 Liquid-solid extraction; 3.3.3 Classical solvent extractions of additives from polymers; 3.3.4 Sonication; 3.4 High-pressure solvent extraction methods; 3.4.1 Supercritical fluid technology; 3.4.2 Analytical SFE; 3.4.3 Subcritical water extraction; 3.4.4 Microwave technology; 3.4.5 Microwave-assisted extractions; 3.4.6 Pressurised fluid extraction; 3.5 Sorbent extraction; 3.5.1 Solid-phase extraction; 3.5.2 Solid-phase microextraction; 3.5.3 Stir bar sorptive extraction 3.6 Methodological comparison of extraction methods 3.6.1 Experimental comparisons; 3.6.2 Extraction selectivity; 3.6.3 'Nonextractable' additive analysis; 3.7 Polymer/additive dissolution methods; 3.8 Hydrolysis; 3.9 Bibliography; 3.9.1 Sampling and sample preparation; 3.9.2 Solvents/solubility; 3.9.3 Extraction methods; 3.10 References; CHAPTER 4 Separation Techniques; 4.1 Analytical detectors; 4.2 Gas chromatography; 4.2.1 High-temperature gas chromatography; 4.2.2 Headspace gas chromatography; 4.3 Supercritical fluid chromatography; 4.4 Liquid chromatography techniques 4.4.1 Planar chromatographies 4.4.2 Column chromatographies; 4.5 Capillary electrophoretic techniques; 4.6 Bibliography; 4.6.1 General texts; 4.6.2 Detectors; 4.6.3 Gas chromatography; 4.6.4 Supercritical fluid chromatography; 4.6.5 Thin-layer chromatography; 4.6.6 Liquid chromatography; 4.6.7 Size-exclusion chromatography; 4.6.8 Ion chromatography; 4.6.9 Capillary electrophoretic techniques; 4.7 References; CHAPTER 5 Polymer/Additive Analysis: The Spectroscopic Alternative; 5.1 Ultraviolet/visible spectrophotometry; 5.2 Infrared spectroscopy; 5.3 Luminescence spectroscopy 5.4 High-resolution nuclear magnetic resonance spectroscopy

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Sommario/riassunto

This industrially relevant resource covers all established and emerging analytical methods for the deformation of polymeric materials, with emphasis on the non-polymeric components. Each technique is evaluated on its technical and industrial merits. Emphasis is on understanding (principles and characteristics) and industrial applicability. Extensively illustrated throughout with over 200 figures, 400 tables, and 3,000 references.

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