## CONTENTS

OV.	ERVIEW	
1.	Benign by Design Chemistry	2
2.	Environmentally Benign Chemical Synthesis and Processing for the Economy and the	
	Environment	32
BEI	NIGN CHEMISTRY: RESEARCH	
3.	Microbial Biocatalysis: Synthesis of Adipic Acid from D-Glucose	32
4.	Mechanistic Study of a Catalytic Process for Carbonylation of Nitroaromatic Compounds:	
	Developing Alternatives for Use of Phosgene	46
5.	Preparative Reactions Using Visible Light: High Yields from Pseudoelectrochemical	
	Transformation	64
6.	A Photochemical Alternative to the Friedel-Crafts Reaction	76
7.	Mn (III)-Mediated Electrochemical Oxidative Free-Radical Cyclizations	84
8.	Supercritical Carbon Dioxide as a Medium for Conducting Free-Radical Reactions	98
9.	The University of California – Los Angeles Styrene Process	114
BE	NIGN CHEMISTRY: INDUSTRIAL APPLICATIONS	
10.	Generation of Urethanes and Isocyanates from Amines and Carbon Dioxide	122
11.	Nucleophilic Aromatic Substitution for Hydrogen: New Halide-Free Routes for	
	Production of Aromatic Amines	133
12.	Chemistry and Catalysis: Keys to Environmentally Safer Processes	144
TO	OLS FOR ASSESSMENT OF BENIGN CHEMISTRY	
13.	Alternative Syntheses and Other Source Reduction Opportunities for Premanufacture	
	Notification Substances at the U.S. Environmental Protection Agency	156
14.	Computer-Assisted Alternative Synthetic Design for Pollution Prevention at the U.S.	
	Environmental Protection Agency	166
INI	DEX	
	Author Index	187
	Affiliation Index	187
	Subject Index	187