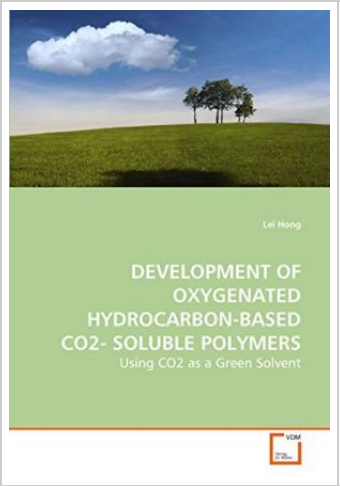

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DEVELOPMENT OF OXYGENATED HYDROCARBON-BASED CO2- SOLUBLE POLYMERS

By Hong, Lei

Condition: New. Publisher/Verlag: VDM Verlag Dr. Müller | Using CO2 as a Green Solvent | Recently the use of sub/supercritical CO2 has received much attention as a green alternative to organic solvents for chemical processes because of its pressure-tunable physicochemical properties and economic advantages. But, the advantages are diminished because of a narrow range of CO2-soluble materials. The goal of this work is to identify and design oxygenated hydrocarbon-based CO2-soluble polymers that are able to serve as construction blocks for CO2 soluble materials. Without concerning on the cost and the environmental persistence like fluorinated materials, the inexpensive and environmentally benign materials would significantly enhance the viability of CO2-based technology. We proposed specific new polymer structures: poly (3-acetoxy oxetane), poly (vinyl methoxymethyl ether), and cellulose triacetate oligomers. Phase behavior studies were also performed with CO2-philic compounds containing vinyl acetate, propylene glycol, or tert-butyl groups. New non-fluorous CO2-soluble materials were identified, which were acetate-rich with flexible chains, weak self-interactions, and multidentate interaction between CO2 and the functional groups. | Format: Paperback | Language/Sprache: english | 168 pp.

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