

### Study on the Solubility of Binder in Supercritical Carbon Dioxide

Elvina Fitrissia, Young-a Lee, Yuvaraj Haldorai, 심재진\*

영남대학교

(jjshim@yu.ac.kr\*)

Obtained from the leaves of the Brazilian tropical palm tree *Copernicia cerifera*, carnauba wax has been extensively used as binder in metal injection process or powder injection process. Carnauba wax removal from the green body with using supercritical CO<sub>2</sub> gives less time and low temperature than other methods such as solvent, thermal and catalytic debinding process. In this research, effects of pressure, temperature, and co-solvents on the solubility of carnauba wax and polymeric binder were investigated in supercritical CO<sub>2</sub>. The solubility of wax and polymers were measured at high pressures and relatively low temperatures. Two methods are used in this research, batch method and flow method. Solubility increased when flow method is used, especially when chloroform, ethanol, acetone, or n-hexane was used as a co-solvent. It was also influenced by pressure and temperature.

Acknowledgment: This research is supported by DG Economic Circle Leading Industry R&D Program of the Ministry of Knowledge and Economy (MOKE) (R0001657).