

Saving Energy and Efficient Extraction of Binder Materials from Powder Injected Metals using Supercritical CO₂

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Extraction method using supercritical carbon dioxide (scCO₂) is an efficient and safe extraction method. ScCO₂ has high density like liquid and low viscosity like gas. On typical thermal debinding method, it often requires long time and high temperature around 200°C that can consume large amount of energy, resulting high cost of final products. In this study, polymers were firstly prepared and checked solubility in scCO₂ at different conditions. Then, the checked polymers were used as binders in the binding process of metal injection moulding. After extraction of polymer binders by scCO₂, final products are commonly component items and are used in various industries and applications. This method is green, fast, cheap and easy to scale-up.

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