

## Ni-Zn 複塩基性塩触媒による $\beta$ -ケトエステルと不飽和ケトンとの Michael 付加反応：水熱処理条件が触媒活性に与える影響

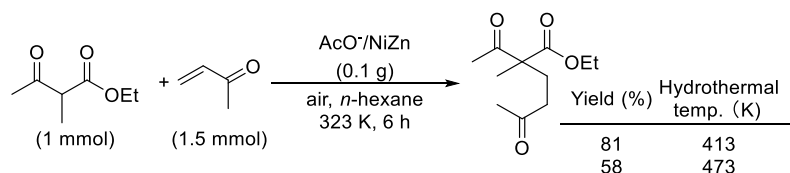
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Michael Addition Between  $\beta$ -Ketoester and Unsaturated Ketone by Use of Ni-Zn Hydroxy Double Salt Catalysts: Effect of Hydrothermal Conditions on Their Catalytic Activities (<sup>1</sup>*Graduate School of Engineering, Chiba University*) ○Naoki Yokokawa<sup>1</sup>, Takayoshi Hara<sup>1</sup>, Nobuyuki Ichikuni<sup>1</sup>, and Shogo Shimazu<sup>1</sup>

We have already developed new type Brønsted base catalysts by use of anion-exchangeable layered Ni-Zn hydroxy double salt (NiZn)<sup>1)</sup>. To improve the catalytic activity of NiZn, we tried to synthesize the small size of acetate-intercalated NiZn (AcO<sup>-</sup>/NiZn) by changing the hydrothermal conditions, in this study. In the case of hydrothermal temperature of 413 K for the synthesis, a smaller size of AcO<sup>-</sup>/NiZn was obtained than that of 473 K, confirmed by SEM images. The Michael addition reaction of ethyl 2-methylacetoacetate with methyl vinyl ketone was carried out with the synthesized AcO<sup>-</sup>/NiZn catalysts in *n*-hexane solvent. The product yield was increased from 58 to 81 %, by changing the hydrothermal temperature from 473 K to 413 K.

**Keywords :** Ni-Zn Hydroxy Double Salt, Solid Base Catalyst, Hydrothermal Synthesis, Michael Addition

当研究室では、アニオン交換能を有する層状 Ni-Zn 複塩基性塩 (NiZn)を固体塩基触媒として用いた研究を行ってきた<sup>1)</sup>。本研究では、NiZn を合成する際の水熱処理条件を詳細に検討することにより NiZn 粒子を微小化し、塩基触媒活性の向上を目指した。酢酸アニオン導入型 NiZn (AcO<sup>-</sup>/NiZn)を合成する際の水熱処理温度を 473 K から 413 K に変更すると、二次粒子径の小さな AcO<sup>-</sup>/NiZn が生成することが SEM 像で確認できた。413 K の水熱合成温度で調製した触媒を 2-メチルアセト酢酸エチルとメチルビニルケトンとのマイケル付加反応に適用すると、生成物収率が 58%から 81 %へと増加することが見出された。



1) a) T. Hara, J. Kurihara, N. Ichikuni, S. Shimazu, *Chem. Lett.* **2010**, 39, 304. b) T. Hara, J. Kurihara, N. Ichikuni, S. Shimazu, *Catal. Sci. Technol.* **2015**, 5, 578.