

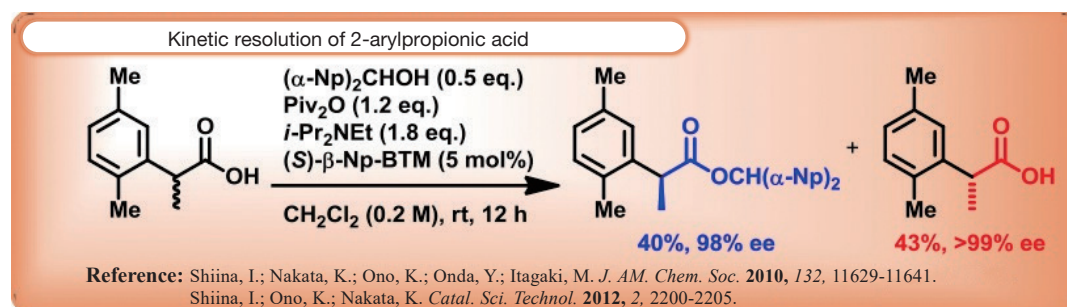
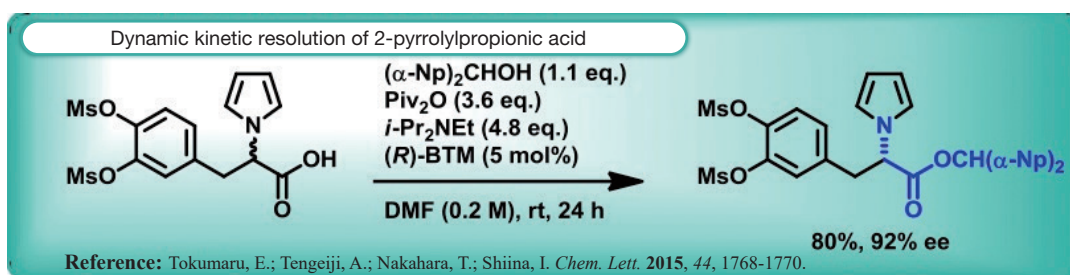
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Purpose of Research

We have developed “dynamic kinetic resolution (DKR)” in which optically-active ester can be obtained at a yield of almost 100% by combining asymmetric esterification with racemization (I. Shiina, K. Ono, K. Nakata, *Catalysis – Science & Technology*, 2, 2200–2205 (2012). [Cover Feature Article] [Hot Article] [Most Accessed Article]).

Furthermore, we have also developed a novel synthesizing process which provides optically-active amino acid equivalent with excellent selectivity by realizing DKR in a manner of applying the racemic 2-(1H-Pyrrol-1-yl)alkanoic acid to this reactions.

Summary of Research



- Convert racemic carboxylic acid to optically-active carboxylate ester
- Synthesize optically-active 2-arylpropionic ester at a yield of almost 100%
- Synthesize optically-active α -amino acid ester at a yield of almost 100%
- Capable of selective synthesizing one of enantiomers directly without racemic form separation following synthesis of racemic drug or medicinal intermediate

Points

- Selective synthesis of racemic α -amino acid
- Need not to separate/divide synthesized racemic form
- Yield of almost 100%

Future Developments

- Find other synthesis processes or solutions for shortening of synthesis time
- Expand a range of application of substrate
- Produce novel catalysts
- Undertake collaborate projects with pharmaceutical, food development or medicinal intermediate companies while aiming for acquiring sponsored research funds

- Associated System: JST A-STEP “High-risk Challenge” type (in 2014–2017)
- Awards: The Chemical Society of Japan Award for Creative Work 2013, The Inoue Prize for Science 2014, The Ichimura Prize for Science 2014, The Prize for Science and Technology from the Ministry of Japan 2015
- Intellectual Property: Japanese Patent Application No. 2014–018887 “Method for Preparing Optically-active Carboxylate Ester”
- Prototype: Present
- Sample: Available