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Flow microreactors enables green chemistry approach for organolithium chemistry

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Protecting-group-free synthesis has received significant recent research interest in the context of ideal synthesis and green sustainable chemistry. In general, organolithium species react with electrophilic functional groups very rapidly, and therefore such functional groups should be protected before an organolithium reaction, if they are not involved in the desired transformation. If organolithium chemistry could be free from such a limitation, its power would be greatly enhanced. A flow microreactor enables such protecting-group-free organolithium reactions by choosing the appropriate residence time and the reaction temperature. Organolithium species bearing alkoxycarbonyl, nitro, and ketone carbonyl groups can be generated and reacted with various electrophiles using a flow-microreactor system. In addition, asymmetric carbolithiation of conjugate enynes can be also achieved without the epimerization of a configurationally unstable chiral organolithium intermediate based on precise control of the residence time using a flow microreactor. In this presentation, we report that a flow microreactor system enables the generation of various unstable organolithium compounds.

Biography

Aiichiro Nagaki received his PhD in 2005 from Kyoto University under the supervision of Professor Jun-ichi Yoshida. He worked with Professor Hiroaki Suga, Tokyo University from 2005 as a Postdoctoral Fellow. In 2006, he became an Assistant Professor at Kyoto University. He was promoted to Junior Associate Professor in 2013. His current research interests are Organic Synthesis, Polymer Synthesis, and Microreactor Synthesis. He has received several awards which includes Takeda Pharmaceutical Co., Ltd. award in Synthetic Organic Chemistry, Japan (2012), Incentive Award in Synthetic Organic Chemistry, Japan (2012), and Young Innovator Award on Chemistry and Micro-Nano Systems (2013).

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