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Synthesis of Conjugated Polymers Containing Gallium Atoms and Evaluation of Conjugation Through Four-Coordinate Gallium Atoms
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Category

Synthesis of Materials and Unnatural Products

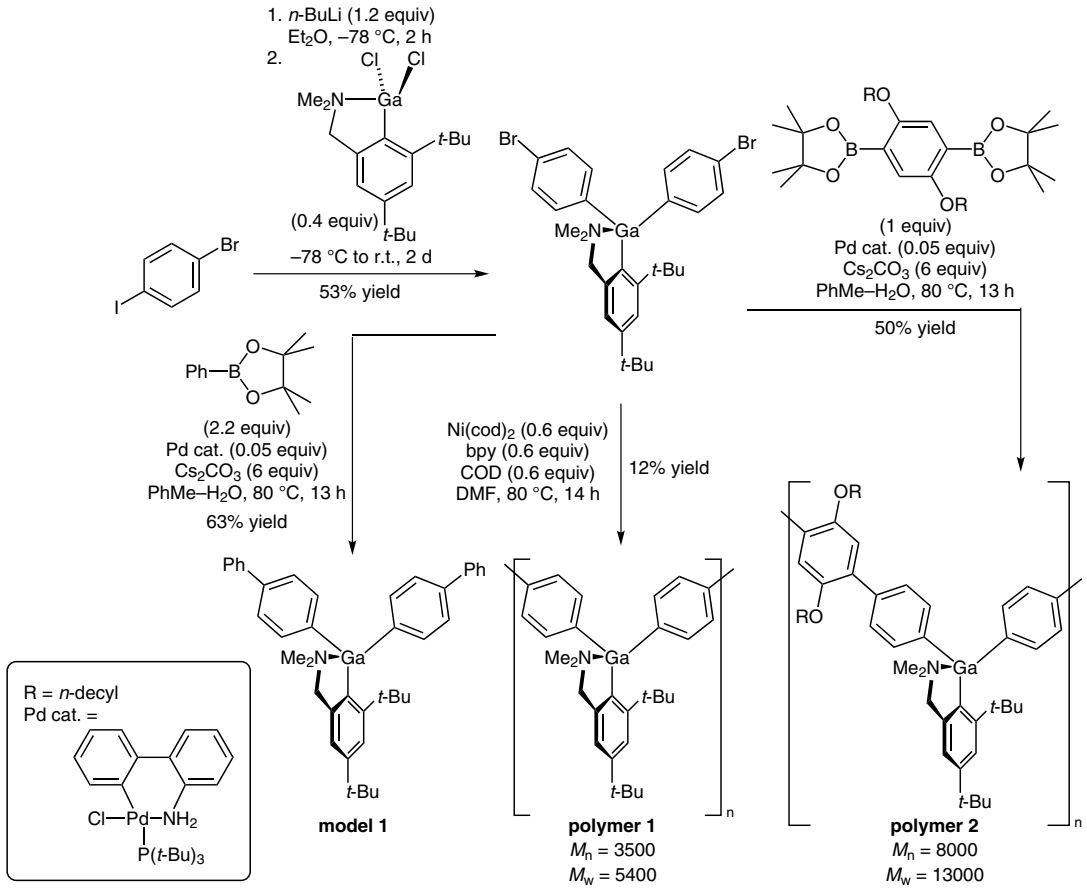
Key words

gallium

conjugated polymers

cross-coupling

Having the Gall to Synthesize Conjugated Polymers Containing Gallium Atoms



Significance: The effect of gallium atoms in conjugated polymers is relatively unexplored, in part due to the air and moisture sensitivity of three-coordinate gallium centers. Tanaka, Chujo, and coworkers utilize a four-coordinate gallium monomer in which the gallium is stabilized by amine chelation and bears two 4-bromophenyl moieties. With Suzuki–Miyaura or Yamamoto coupling, a variety of air-stable π-systems containing gallium atoms are obtained. UV/Vis and DFT studies show that π-conjugation extends through the gallium atoms.

Comment: This study shows that gallium atoms can be incorporated into air-stable conjugated polymers. While typical aryl–aryl coupling conditions are employed in this study, relatively poor polymer yields and lengths are obtained. Future optimization of polymerization conditions could facilitate the development of gallium-containing polymers.

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