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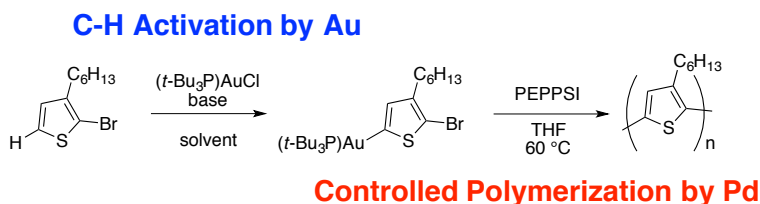
IL20 – Preparation of an Aurylated Alkylthiophene Monomer via C–H Activation for Use in PEPPSI Catalyzed Controlled Chain Growth Polymerization

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The use of Au(I) and its ability to directly C–H activate 2-bromo-3-hexylthiophene to form a reactive monomer species, bypassing the typical Grignard monomer formation from a dihalogenated thiophene, is investigated. Addition of PEPPSI-*i*Pr as a palladium catalyst source in the presence of the resultant aurylated thiophene monomer yielded poly(3-hexylthiophene) as observed by both NMR and GPC. Studies on the growth of these polymers show linear dependence between M_n and monomer conversion, low dispersities, as well as M_n predicted by catalyst loading, which is supportive of a living-type chain growth mechanism. This Au-Pd system represents a novel methodology for incorporating C–H activation into the synthesis of P3HT with control over M_n .



References

1. Okamoto, K.; Zhang, J.; Housekeeper, J.; Marder, S.; Luscombe, C. K. *Macromolecules*, **2013**, *46*, 8059.