

# Polymer Chemistry

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## Synthesis of functional and topological polyesters mediated by metal coordination catalysts

**Dongmei Cui**

Changchun Institute of Applied Chemistry- CAS, China

Luminescent materials have gained an upsurge in research interest in the past decades, however, the luminophores are only highly emissive in dilute solutions, and aggregations often cause partial or even complete quenching of the light emissions (ACQ). In contrast, the propeller-like small molecules show aggregation-induced emission (AIE) phenomenon and have been found many high-tech applications. By merit of their good capacity to be facily fabricated into thin solid films, AIE active polymers have become the research target. To date, the mostly explored polymers with AIE characteristic are those bearing conjugated double or triple bonds synthesized by polymerization of the monomers modified by the AIE-active luminogens, or by attaching the polymers to the predesigned substrates bearing these units. Herein, we report a novel and efficient strategy, named AIE-active molecules mediated chain transfer polymerization, which employs a rare-earth metal catalyst shuttling among the excess AIE-active compounds as the chain transfer agents (CTA) via fast-reversible exchange reaction, to initiate polymerizations. Polymer chains appear to grow from the CTA, thus, achieving extremely high catalyst productivity and incorporating the AIE-active units in situ into the obtained polymer chains at well-defined positions.

dmcui@ciac.ac.cn