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Anionic Polymerization of Multi-Vinylferrocenes

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Abstract

Protocols for anionic polymerization of vinylferrocenes in bulk (**b**) and solution (**s**) are reported. Polymerization of vinylferrocenes bearing one or multiple (2–4) vinyl groups yielded linear polyvinylferrocene **PVF-1(b, s)** or cross-linked polyvinylferrocenes **PVF-2 – PVF-4(b, s)**, respectively. Furthermore, copolymerization of mono- with multifunctional vinylferrocenes produced cross-linked copolymers **PVF-5 – PVF-7(b, s)**. For anionic polymerization in bulk, a high monomer conversion and a relatively high dispersity was observed. A reversible redox behavior of the ferrocenyl group with cycle stability up to 100 cycles was found for **PVF-(1s – 7s)**. Li-ion battery cell tests demonstrated the applicability of the polyvinylferrocenes **PVF-1b** and **PVF-(5b – 7b)** as electrode materials.

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