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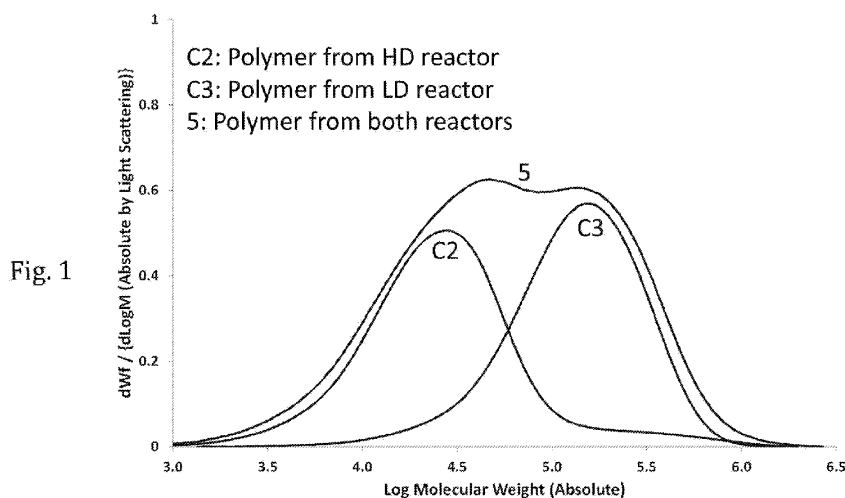
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(54) Title: PROCESSES FOR MAKING MULTIMODAL ETHYLENE-BASED POLYMERS



(57) **Abstract:** Embodiments are directed to a process for producing ethylene-based polymer in a reactor system comprising a first reactor and a second reactor. The process comprises polymerizing ethylene, one or more (C₃-C₁₄) α -olefin monomers, and at least one polyene, in the presence of one multi-chain catalyst and at least one single-chain catalyst in the first reactor to produce a first reactor polyethylene product comprising long chain branching, wherein the multi-chain catalyst comprises a plurality of polymerization sites, and wherein the long-chain branching occurs by connecting two polymer chains of the multi-chain catalyst with the polyene in a concerted fashion during the polymerization; and polymerizing ethylene and one or more (C₃-C₁₄) α -olefin monomers in the absence of an initial polyene feed and in the presence of at least one single-chain catalyst in the second

[Continued on next page]

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reactor to produce a second reactor polyethylene product, wherein the ethylene-based polymer comprises the first and second reactor polyethylene products.