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(21) International Application Number: PCT/US97/11364 (22) International Filing Date: 9 July 1997 (09.07.97) (30) Priority Data: 08/677,828 ✓ 10 July 1996 (10.07.96) ✓ US (71) Applicant: CARNEGIE-MELLON UNIVERSITY [US/US]; 5000 Forbes Avenue, Pittsburgh, PA 15213-3890 (US). (72) Inventors: MATYJASZEWSKI, Krzysztof, 9 Queens Court, Pittsburgh, PA 15238 (US). COCA, Simion, 4 Bayard Road #28, Pittsburgh, PA 15213 (US). GAYNOR, Scott, G., 6375 Alderson Street, Pittsburgh, PA 15217 (US). NAKAGAWA, Yoshiki, 230 North Craig Street #401, Pittsburgh, PA 15213 (US). JO, Seong, Mu, 5030 Centre Avenue #755, Pittsburgh, PA 15213 (US). (74) Agents: MASON, J., Derek et al.; Oblon, Spivak, McClelland, Maier & Neustadt, P.C., Crystal Square Five, 4th floor, 1755 Jefferson Davis Highway, Arlington, VA 22202 (US).		(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, ARIPO patent (GH, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i>
(54) Title: PREPARATION OF NOVEL HOMO- AND COPOLYMERS USING ATOM TRANSFER RADICAL POLYMERIZATION		
(57) Abstract The present invention is directed to a process of atom (or group) transfer radical polymerization for the synthesis of novel homopolymer or a block or graft copolymer, optionally containing at least one polar group, with well defined molecular architecture and narrow polydispersity index, in the presence of an initiating system comprising (i) an initiator having a radically transferrable atom or group, (ii) a transition metal compound, and (iii) a ligand; the present invention is also directed to the synthesis of a macromolecule having at least two halogen groups which can be used as a macroinitiator component (i) to subsequently form a block or graft copolymer by an atom or group transfer radical polymerization process; the present invention is also directed to a process of atom or group transfer radical polymerization for the synthesis of a branched or hyperbranched polymer; in addition, the present invention is directed to a process of atom or group transfer radical polymerization for the synthesis of a macroinitiator which can subsequently be used to produce a block or graft copolymer.		