

# Turkish Journal of Chemistry


Turkish Journal  
of  
Chemistry

Studies on the Preparation of  $\alpha,\omega$ -Telechelic Polymers by the Combination of Reverse Atom Transfer Radical Polymerization and Atom Transfer Radical Coupling Processes

Binnur AYDOĞAN, Yusuf YAĞCI

Istanbul Technical University, Department of Chemistry, Maslak 34469, İstanbul-TURKEY

e-mail: yusuf@itu.edu.tr

 [Keywords](#)  
 [Authors](#)



[chem@tubitak.gov.tr](mailto:chem@tubitak.gov.tr)

[Scientific Journals Home Page](#)

**Abstract:** Monofunctional polystyrenes with cyano, carboxylic acid, and hydroxyl terminal groups were synthesized by reverse atom transfer radical polymerization (RATRP) using corresponding azo initiators in conjunction with copper and iron complexes. These functional polymers were further used in the atom transfer radical coupling (ATRC) reaction in the presence of Cu(I) and Cu(0) in order to obtain telechelic polystyrenes. In the iron-mediated system, while RATRP experiments gave satisfactory results, the corresponding ATRC process yielded polymers with low functionality. The copper-mediated system, however, gave contrary results. In the RATRP step, initiation efficiency was rather low and polymers with relatively higher polydispersity were obtained. ATRC reactions of these polymers were efficient in obtaining telechelics and a maximum extent of coupling  $q_{\max} = 0.99$  can be attained under appropriate conditions.

**Key Words:** Reverse atom transfer radical polymerization (RATRP), atom transfer radical coupling (ATRC), azo-initiator, telechelics

---

Turk. J. Chem., **31**, (2007), 1-10.

Full text: [pdf](#)

Other articles published in the same issue: [Turk. J. Chem.,vol.31,iss.1.](#)