

ARC '16

مؤتمر مؤسسة قطر
السنوي للبحوث

QATAR FOUNDATION
ANNUAL RESEARCH
CONFERENCE



Towards World-class
Research and Innovation

Health and Biomedical Pillar

<http://dx.doi.org/10.5339/qfarc.2016.HBPP1359>

The Miniaturization of Reverse Addition-fragmentation atom Transfer Living Polymerizations — the Democratization of RAFT

Albert Ryszard Liberski

Sidra Medical and Research Center | Doha – Qatar, QA

Email: aliberski@sidra.org

Reverse addition-fragmentation atom transfer (RAFT) living polymerization, a popular means of preparing copolymers of methacrylate and methyl methacrylate with narrowly defined size distributions and architectures, can readily be performed in sub-mililiter quantities in the absence of stirring, yielding biocompatible materials with excellent yields and low PDI values, and a linear molecular weight response curve extending to above $180,000 \text{ g} \cdot \text{mol}^{-1}$. When multiple studies were done involving the variation on the RAFT/monomer ratio under a variety of concentrations, the corresponding molecular weights of the materials exhibited a linear response. Furthermore, in comparing the resulting material to polymers prepared using more classical free-radical polymerization techniques, the miniaturized RAFT-mediated batches showed similar biocompatibility. These facile reaction conditions offer the prospect of preparing well defined polymeric systems in parallel with minimal equipment investment, without compromising the quality of the final product. The resulting polymers were then inkjet printed onto an agarose-coated glass slide, and then tested for bioactivity.

Cite this article as: Liberski AR. (2016). The Miniaturization of Reverse Addition-fragmentation atom Transfer Living Polymerizations — the Democratization of RAFT. Qatar Foundation Annual Research Conference Proceedings 2016: HBPP1359 <http://dx.doi.org/10.5339/qfarc.2016.HBPP1359>.