Supporting Information

Fluorinated Vesicles Embedded with Ru-based Catalyst as Efficient and Recyclable Nanoreactors for Photo-mediated Aerobic Oxidation

Yurong Que,[a,#] *Junyi Ruan*,[b,#] *Yan Xiao*,[b] *Chun Feng*,[a,*] *Guolin Lu*,[a] *Xiaoyu Huang*[a,*]

[a] Key Laboratory of Synthetic and Self-Assembly Chemistry for Organic Functional Molecules, Center for Excellence in Molecular Synthesis, Shanghai Institute of Organic Chemistry, University of Chinese Academy of Sciences, Chinese Academy of Sciences, 345 Lingling Road, Shanghai 200032, People's Republic of China

[b] School of Materials Science and Engineering, East China University of Science and Technology, 130 Meilong Road, Shanghai 200237, People's Republic of China

# Both authors contributed equally to this work.

* To whom correspondence should be addressed, E-mail: cfeng@sioc.ac.cn (Tel: +86-21-54925606, Fax: +86-21-64166128), xyhuang@mail.sioc.ac.cn (Tel: +86-21-54925310, Fax: +86-21-64166128).

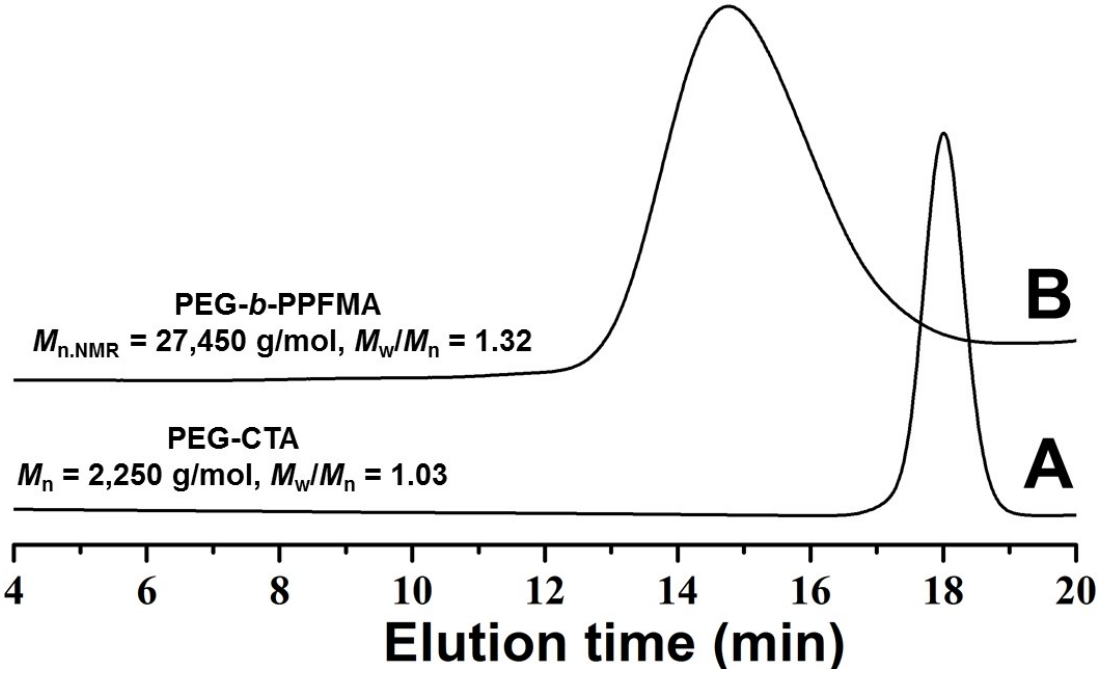

Figure S1. GPC curves of PEG-CTA (A) and PEG-*b*-PPFMA (B) at 35°C in THF.

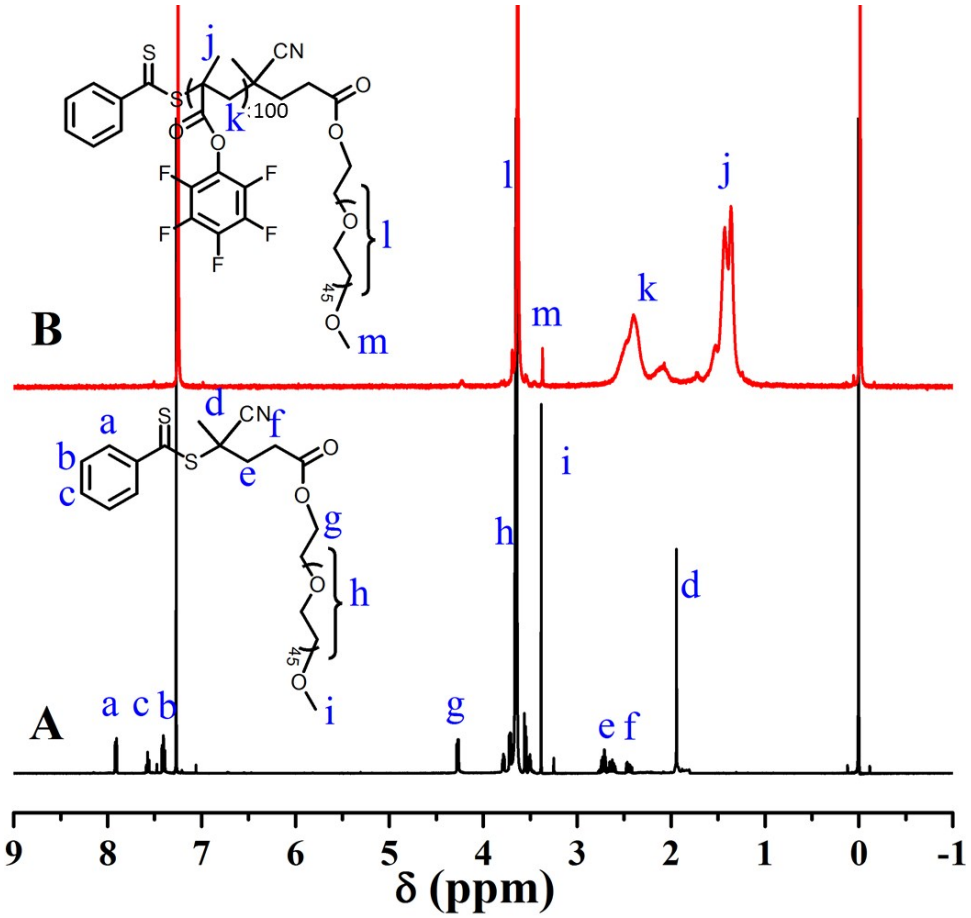

Figure S2. ^{1}H NMR spectra of PEG-CTA (A) and PEG-*b*-PPFMA (B) in $CDCl_3$.

$N_{PFMA} = 90S_k/S_l$, S_k and S_l: integration area of peak 'k' and 'l'.

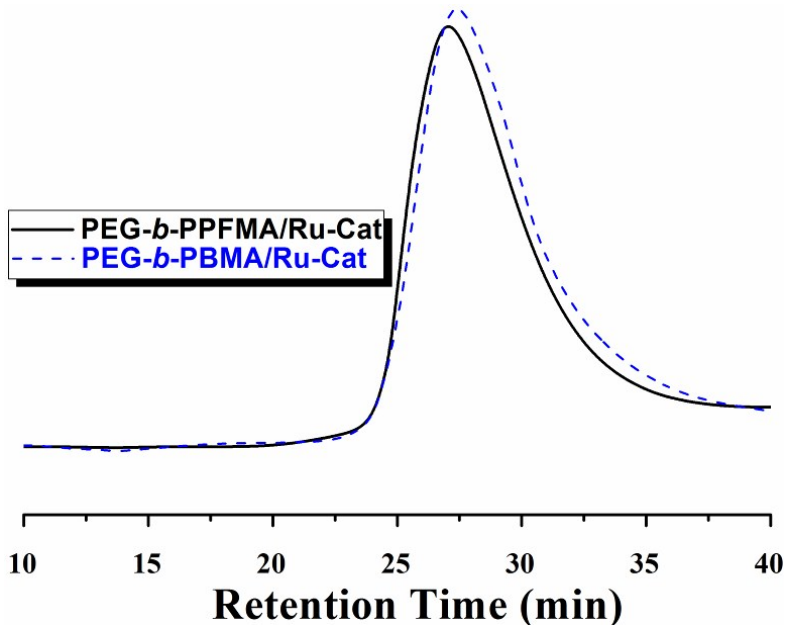

Figure S3. GPC curves of PEG-*b*-PPFMA/Ru-Cat (A) and PEG-*b*-PBMA/Ru-Cat (B) at 50°C in LiBr-added DMF ([LiBr] = 50 mM).

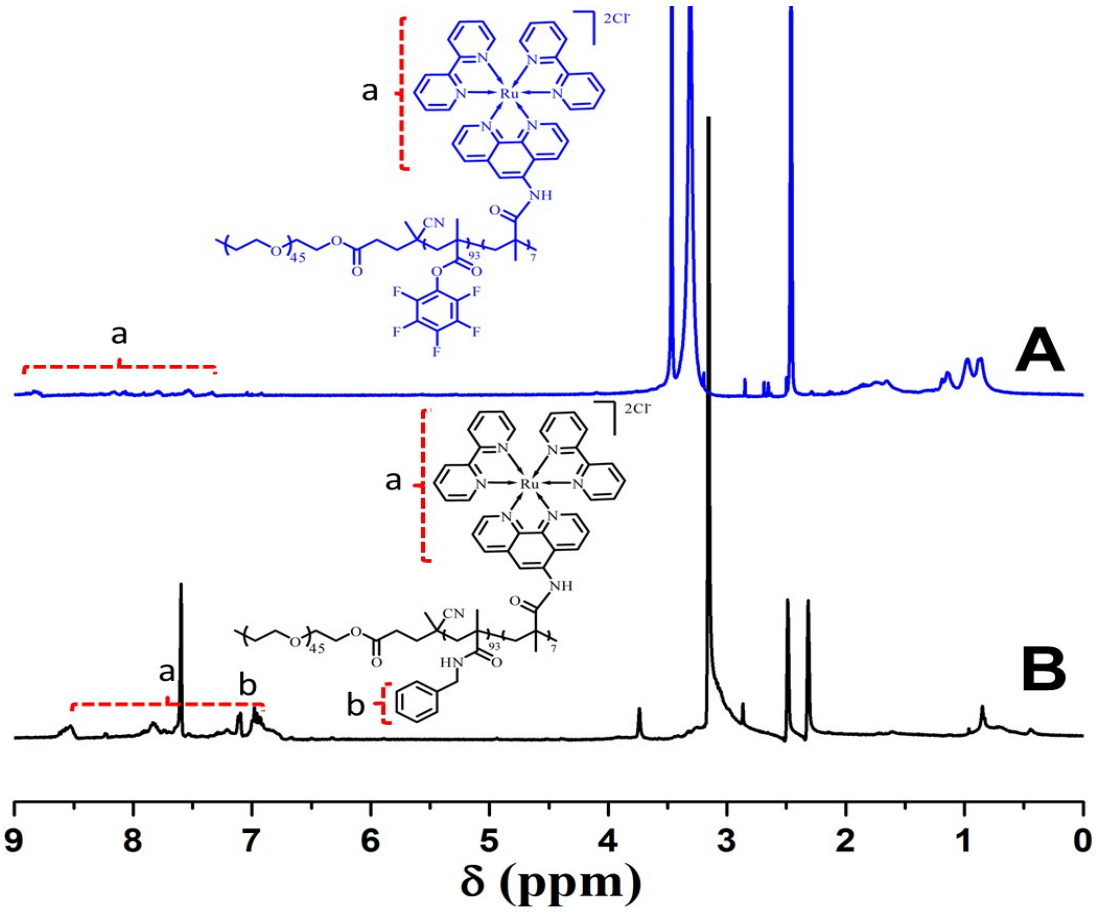

Figure S4. ^{1}H NMR spectra of PEG-*b*-PPFMA/Ru-Cat in DMSO-d_6 (A) and PEG-*b*-PBMA/Ru-Cat in DMF-d_7 (B).

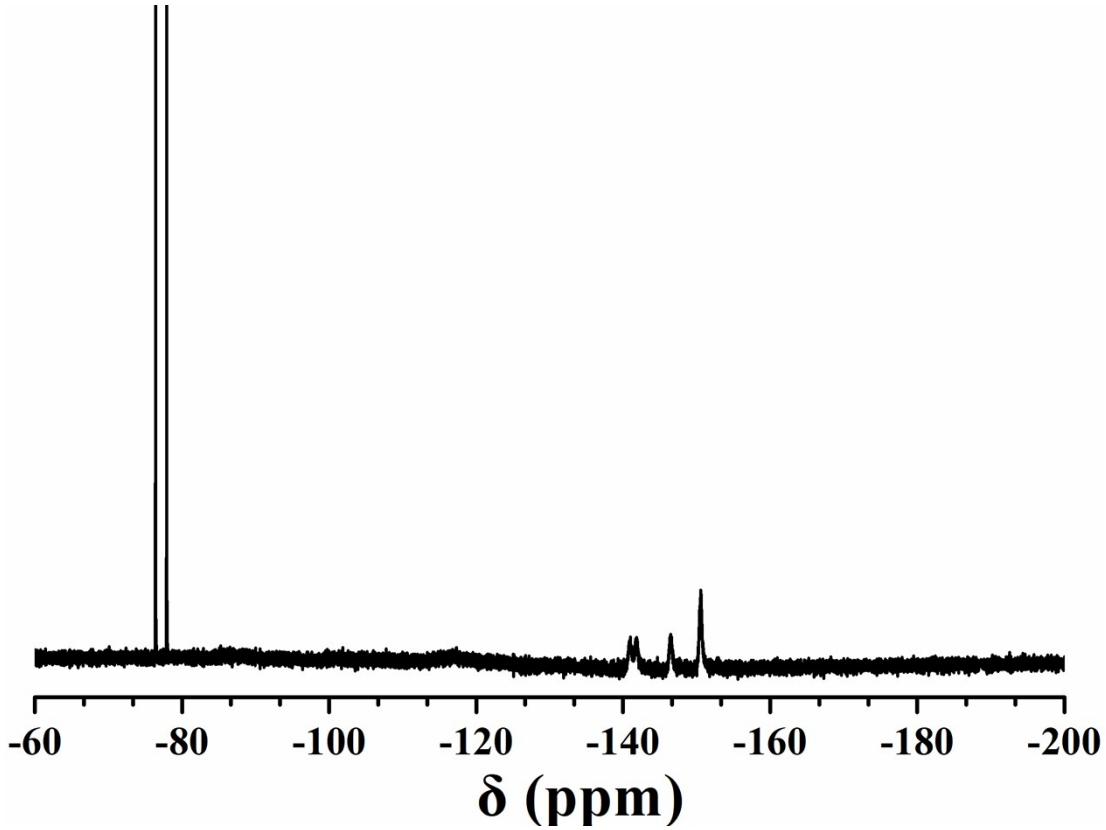

Figure S5. ^{19}F NMR spectrum of PEG-*b*-PPFMA/Ru-Cat nanoreactor after one cycle of reaction. From this spectrum, one can notice that no detectable peak attributed to free pentafluorophenol appeared after the reaction. This result demonstrated that possible hydrolysis of pentafluorophenyl ester can be excluded.