

## **Supplementary Materials**

for

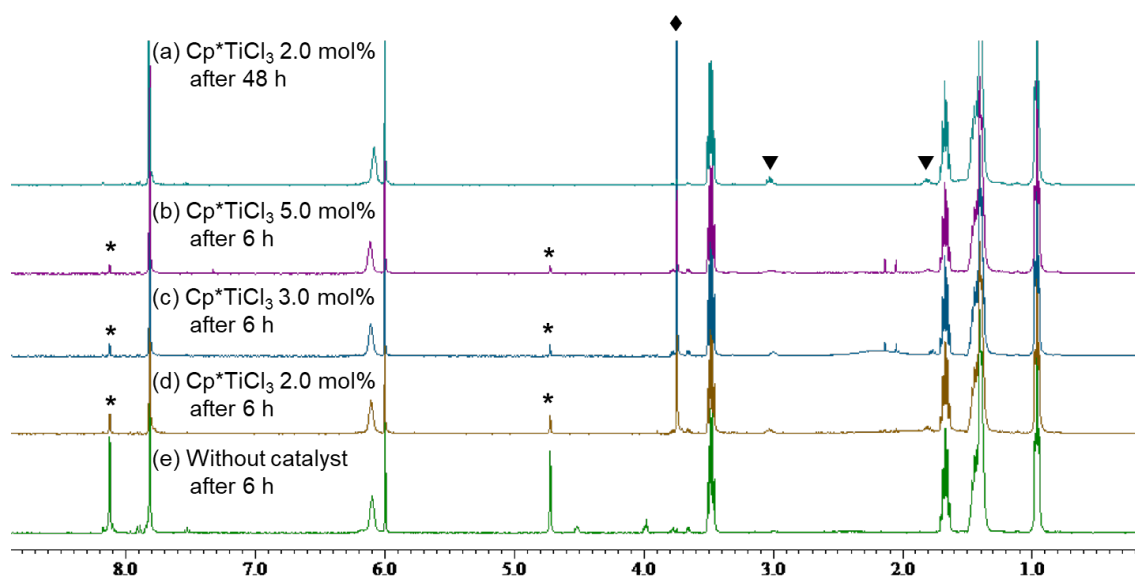
Depolymerization of PET with *n*-Hexylamine, *n*-Octylamine, and with 3-Amino-1-Propanol Affording Terephthalamides

Sumiho Hiruba,<sup>1</sup> Yohei Ogiwara<sup>2</sup> and Kotohiro Nomura<sup>1,\*</sup>

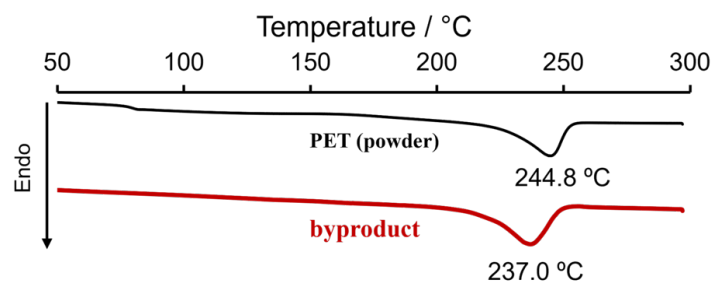
<sup>1</sup>Department of Chemistry, Tokyo Metropolitan University, 1-1 Minami Osawa, Hachioji, Tokyo 192-0397, Japan; <sup>2</sup>Department of Chemistry and Biomolecular Science, Gifu University, 1-1 Yanagido, Gifu, Gifu 501-1193, Ja-pan

\*Correspondence: [ktnomura@tmu.ac.jp](mailto:ktnomura@tmu.ac.jp)

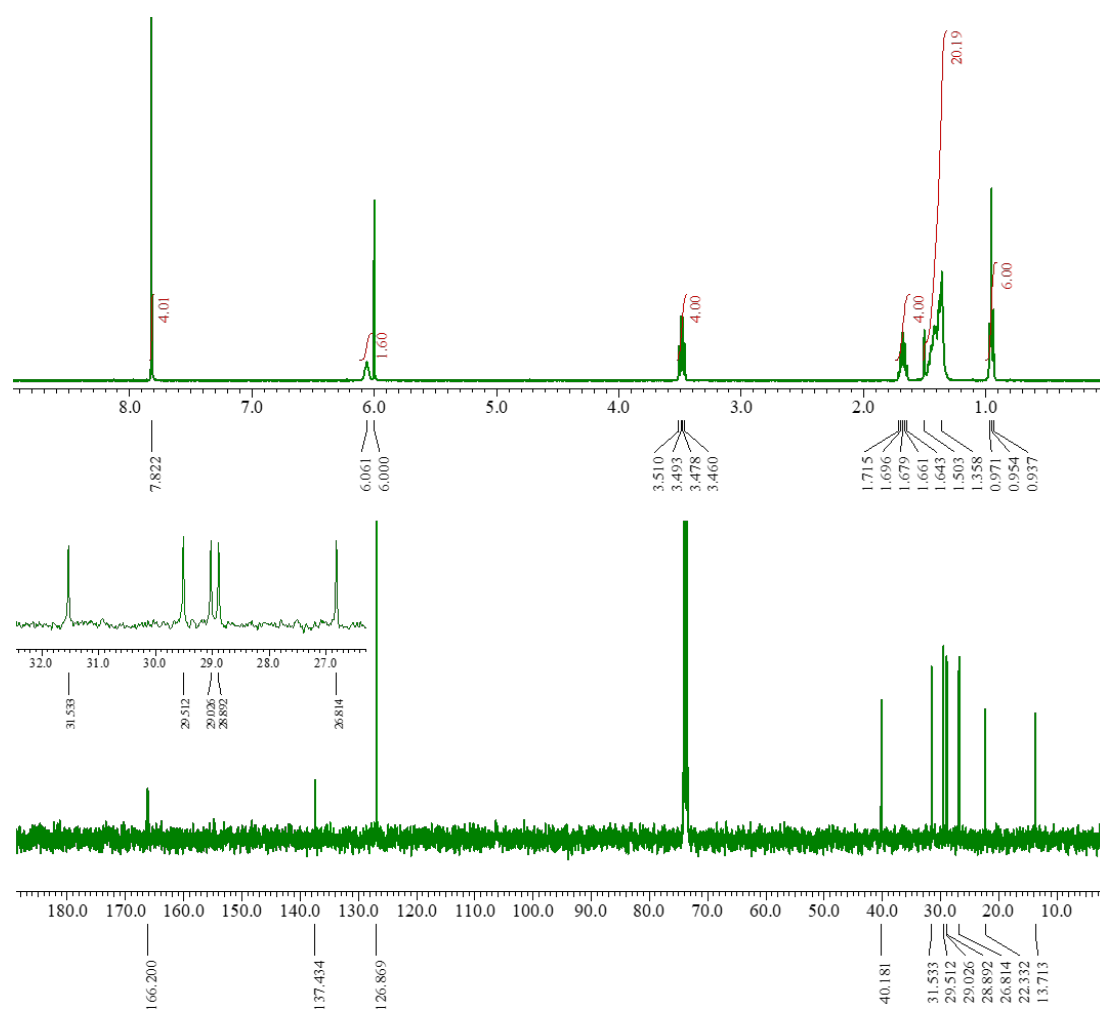
## **Contents**



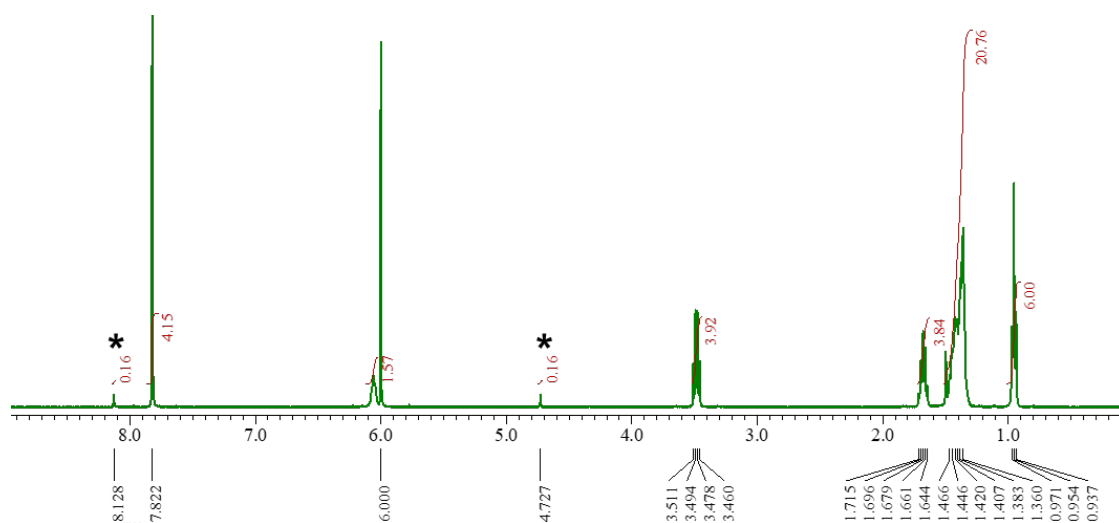
**Figure S1.**  $^1\text{H}$  NMR spectra (in tetrachloroethane- $d_2$  at 100  $^\circ\text{C}$ ) of the reaction mixture (after removal of volatiles) in the reaction of PET with *n*-hexylamine (130  $^\circ\text{C}$ ) in the presence of  $\text{Cp}^*\text{TiCl}_3$ . Conditions: (a)  $\text{Cp}^*\text{TiCl}_3$  2.0 mol% after 48 h, (b)  $\text{Cp}^*\text{TiCl}_3$  5.0 mol% after 6 h, (c)  $\text{Cp}^*\text{TiCl}_3$  3.0 mol% after 6 h, (d)  $\text{Cp}^*\text{TiCl}_3$  2.0 mol% after 6 h, (e) without catalyst after 6 h. Resonances marked with \* were corresponded to byproduct (PET oligomers) and peaks marked with ♦, ▼ are impurity (♦ ethylene glycol; ▼ THF in NMR solvent).



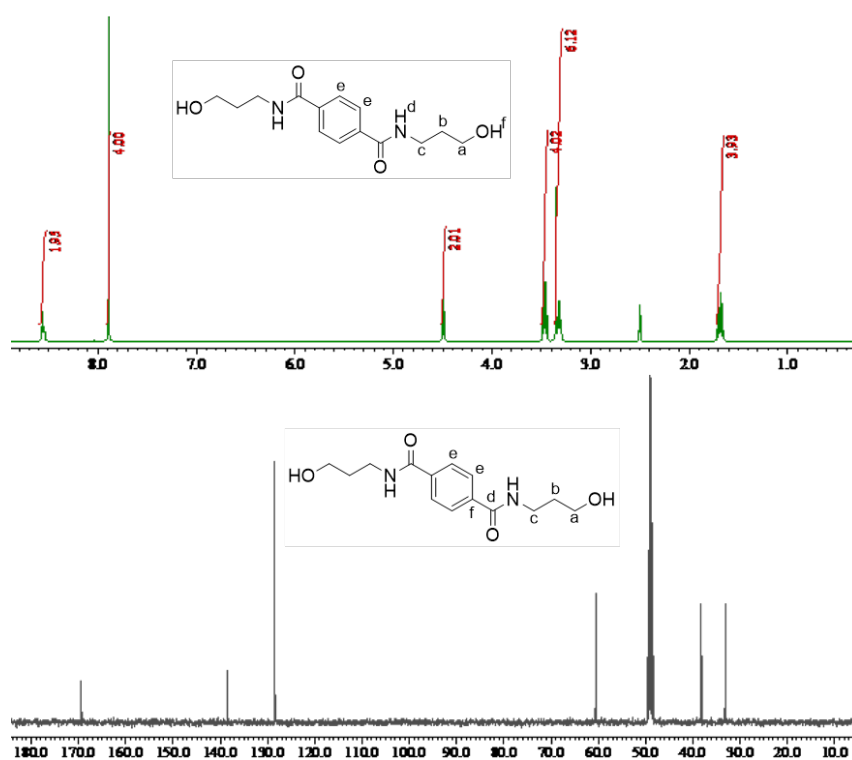
**Figure S2.** DSC thermograms for PET and byproduct (PET oligomer) isolated from the reaction mixture (runs 8,9).



**Figure S3.** (top)  $^1\text{H}$ -NMR spectrum and (bottom)  $^{13}\text{C}$ -NMR spectrum for di(*n*-octyl) terephthalimide (in tetrachloroethane- $d_2$  at 100 °C).



**Figure S4.**  $^1\text{H}$ -NMR spectrum (in tetrachloroethane- $d_2$  at 100  $^\circ\text{C}$ ) for di(*n*-octyl) terephthalimide isolated from the mixture after 16 h (run 12). Resonances marked with \* were corresponded to byproduct (PET oligomers).



**Figure S5.** (top)  $^1\text{H}$ -NMR spectrum (in DMSO- $d_6$  at 25  $^\circ\text{C}$ ) and (bottom)  $^{13}\text{C}$ -NMR spectrum for bis(3-hydroxypropyl) terephthalimide (in methanol- $d_4$  at 25  $^\circ\text{C}$ ).