

Synthesis, characterization and thermal properties of polynorbornadienes by ring-opening metathesis polymerizations and their hydrogenated derivatives bearing various ester and carboxylic groups

Xiaoxue Lin^a, Jianjun Shi^{a,b*}, Satomi Niwayama^{b*}

^a College of Chemistry and Chemical Engineering, Hainan Normal University, Haikou, Hainan 571158, P. R. China.

^b Division of Sustainable and Environmental Engineering, Graduate School of Engineering, Muroran Institute of Technology, 27-1, Mizumoto-cho, Muroran, Hokkaido, 050-8585, Japan.

E-mail: niwayama@mmm.muroran-it.ac.jp

Table of Contents

1. ¹H NMR and ¹³C NMR spectrum in CDCl₃ of symmetric polymers, **1a-6a** prepared using Grubbs' third generation catalyst **S2**
2. ¹H NMR and ¹³C NMR spectrum in CDCl₃ of non-symmetric polymers, **7a-11a** prepared using Grubbs' third generation catalyst **S8**
3. ¹H NMR and ¹³C NMR spectrum in acetone-*d*₆ of amphiphilic polymers, **12a-16a** prepared using Grubbs' third generation catalyst **S13**
4. ¹H NMR and ¹³C NMR spectrum of hydrogenated polymers **1b-11b** in CDCl₃ **S18**
5. ¹H NMR and ¹³C NMR spectrum of hydrogenated polymers, **12b-16b** in acetone-*d*₆ **S29**































































