Supporting Information for

A Bicyclo[4.2.0]octene-Derived Monomer Provides Completely Linear Alternating Copolymers via Alternating Ring-Opening Metathesis Polymerization (AROMP)

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| Polymer            | Temp | Cald. $M_n$ | $M_n$ | $M_w$ | $D_m$ |
|--------------------|------|-------------|-------|-------|-------|
| poly(4-alt-6)$_{16}$ | 25 °C | 5064        | 10005 | 22682 | 2.0   |
| poly(4-alt-6)$_{16}$ | 35 °C | 5064        | 10005 | 18855 | 1.8   |
| poly(4-alt-6-d$_{10}$)$_{15}$ | 35 °C | 5064        | 12716 | 21298 | 1.7   |
| poly(4-alt-6)$_{34}$ | 35 °C | 12504       | 14552 | 26512 | 1.8   |
| poly(4-alt-6)$_{36}$ | 60 °C | 12504       | 11420 | 24936 | 2.1   |
| poly(3-alt-6-d$_{10}$)$_{6}$ | 25 °C | 1556        | 2046  | 7677  | 3.75  |

GPC determined $M_n$ is larger than calculated $M_n$ due to the Benoit effect.$^1$
Scheme S1. $t_{1/2}$ for each AROM-2 reaction step.

$[\text{Ru}]_{\text{Ph}}^\circ + A \rightarrow [\text{Ru}]-A \xrightarrow{\text{excess}} [\text{Ru}]-6-A \rightarrow [\text{Ru}]-A'-6-A$

3: $t_{1/2} = 40 \text{ min}$   \hspace{1cm}  $t_{1/2} = 28 \text{ min}$
4: $t_{1/2} = 100 \text{ min}$ \hspace{1cm}  $t_{1/2} = 43 \text{ min}$

3: $t_{1/2} = 33 \text{ min}$
4: $t_{1/2} = 48 \text{ min}$

3: $t_{1/2} = 26 \text{ min}$
4: $t_{1/2} = 41 \text{ min}$
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