Supplementary Information for:

Fabrication of polymer brush surfaces with highly–ordered perfluoroalkyl side groups at the brush end and their antibiofouling properties

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Fig. S1 GPC traces of the starting polymer (Br-PMMA\textsubscript{65}-S)\textsubscript{2} (dashed) and the cleaved polymer (solid), respectively.

\[
\begin{align*}
M_n &= 2.6 \times 10^4 \\
M_w/M_n &= 1.21 \\
M_n &= 1.5 \times 10^4 \\
M_w/M_n &= 1.24
\end{align*}
\]

Fig. S2 GPC traces of macroinitiator (Br-PMMA\textsubscript{65}-S)\textsubscript{2} (right) and (Br-PODMA\textsubscript{24-}b-PMMA\textsubscript{65}- S)\textsubscript{2} (left)

\[
\begin{align*}
M_n &= 3.0 \times 10^4 \\
M_w/M_n &= 1.22 \\
M_n &= 1.3 \times 10^4 \\
M_w/M_n &= 1.20
\end{align*}
\]
Fig. S3 $^1$H NMR spectra of (Br-PODMA$_y$-b-PMMA$_{65}$-S)$_2$.

Fig. S4 FTIR spectra of (a) (Br-PMMA$_{65}$-S)$_2$, (b) (FMA$_1$-ec-PMMA$_{65}$-S)$_2$, (c) (FMA$_2$-ec-PMMA$_{65}$-S)$_2$, (d) (FMA$_5$-ec-PMMA$_{65}$-S)$_2$, (e) (FMA$_8$-ec-PMMA$_{65}$-S)$_2$. 
Fig. S5 Relationship between thickness of Au-PMMA$_{65}$-b-PODMA$_{24}$-ec-PFMA$_2$ and rinsing time.

Fig. S6 XPS spectra of Au-PMMA$_{65}$-b-PODMA$_{24}$-ec-PFMA$_2$ brushes surfaces, TOA=30°
Fig. S7 Modulus versus temperature for different fluorinated polymer brushes surfaces. (a) Au-PMMA\textsubscript{126}-ec-FMA\textsubscript{2}, (b) Au-PMMA\textsubscript{65}-b-PODMA\textsubscript{6}-ec-FMA\textsubscript{2}.

Table S1. Surface composition of Au-PMMA\textsubscript{65}-b-PODMA\textsubscript{y}-ec-FMA\textsubscript{2} (y=0, 6, 13, 19, 24) brushes. TOA=30°

<table>
<thead>
<tr>
<th>Samples</th>
<th>$F_{1s}/C_{1s}$</th>
<th>Surface composition (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>-CF\textsubscript{3}</td>
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<tr>
<td>Au-PMMA\textsubscript{65}-ec-PFMA\textsubscript{2}</td>
<td>0.60</td>
<td>5.1</td>
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<tr>
<td>Au-PMMA\textsubscript{65}-b-PODMA\textsubscript{6}-ec-PFMA\textsubscript{2}</td>
<td>0.79</td>
<td>5.9</td>
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<td>Au-PMMA\textsubscript{65}-b-PODMA\textsubscript{13}-ec-PFMA\textsubscript{2}</td>
<td>1.03</td>
<td>7.5</td>
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<tr>
<td>Au-PMMA\textsubscript{65}-b-PODMA\textsubscript{19}-ec-PFMA\textsubscript{2}</td>
<td>1.17</td>
<td>8.3</td>
</tr>
<tr>
<td>Au-PMMA\textsubscript{65}-b-PODMA\textsubscript{24}-ec-PFMA\textsubscript{2}</td>
<td>1.18</td>
<td>10.1</td>
</tr>
</tbody>
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