Thermoresponsive Block Copolymer Micelles with Tunable Pyrrolidone-based Polymer Cores 
Structure/Property Correlations and Their Application as Drug Carriers

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Figure S 16. Transmittance versus temperature plot of PNIPAAm$_{72}$-PBNP$_{73}$. Runs 1 (●), 2, (◇), and 3 (◆). (0.2 mg/mL, DI Water).
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Figure S 24. Hydrodynamic diameter ($D_h$) distribution (Volume (%)) of PNIPAAm$_{72}$-PMNP$_{29}$ micelles at 25 °C (●), 35 °C ( ■), 40 °C (◆), and 50 °C (○). Run 1.
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Figure S 26. Hydrodynamic diameter ($D_h$) distribution (Volume (%)) of PNIPAAm$_{72}$-PMNP$_{29}$ micelles at 25 °C (●), 35 °C (▲), 40 °C (◆), and 50 °C (⊙). Run 3.
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Figure S 28. Hydrodynamic diameter (Dh) distribution (Volume (%)) of PNIPAAm$_{72}$-PNP$_{29}$ micelles at 25 °C (●), 35 °C (■), 40 °C (○), and 50 °C (.setFillcolor(0)). Run 2.
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Figure S 30. Hydrodynamic diameter ($D_h$) distribution (Number (%)) of PNIPAAm$_{72}$-PBNP$_{73}$ micelles at 25 °C (●), 35 °C (■), 40 °C (◇), and 50 °C (○).
Figure S 31. Hydrodynamic diameter ($D_h$) distribution (Volume (%)) of PNIPAAm$_{72}$-PBNP$_{73}$ micelles at 25 °C (●), 35 °C (■), 40 °C (▲), and 50 °C (○). Run 1.

Figure S 32. Hydrodynamic diameter ($D_h$) distribution (Volume (%)) of PNIPAAm$_{72}$-PBNP$_{73}$ micelles at 25 °C (●), 35 °C (■), 40 °C (▲), and 50 °C (○). Run 2.
Figure S 33. Hydrodynamic diameter ($D_h$) distribution (Volume (%)) of PNIPAAm$_{72}$-PBNP$_{73}$ micelles at 25 °C (○), 35 °C (■), 40 °C (▲), and 50 °C (▲). Run 3.

Figure S 34. Hydrodynamic diameter ($D_h$) distribution (Number (%)) of PNIPAAm$_{72}$-PMNP$_{78}$ micelles at 25 °C (○), 35 °C (■), 40 °C (▲), and 50 °C (▲).
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Figure S 36. Hydrodynamic diameter ($D_h$) distribution (Volume (%)) of PNIPAAm$_{72}$-PMNP$_{78}$ micelles at 25 °C (●), 35 °C (■), 40 °C (▲), and 50 °C (○). Run 2.
Figure S 37. Hydrodynamic diameter ($D_h$) distribution (Volume (%)) of PNIPAAm$_{72}$-PMNP$_{78}$ micelles at 25 °C (●), 35 °C (■), 40 °C (◇), and 50 °C (○). Run 3.

Figure S 38. Hydrodynamic diameter ($D_h$) distribution (Number (%)) of PNIPAAm$_{72}$-PNP$_{79}$ micelles at 25 °C (●), 35 °C (■), 40 °C (◇), and 50 °C (○).
Figure S 39. Hydrodynamic diameter ($D_h$) distribution (Volume (%)) of PNIPAAm$_{72}$-PnP$_{79}$ micelles at 25 °C (●), 35 °C (▲), 40 °C (◆), and 50 °C (①). Run 1.

Figure S 40. Hydrodynamic diameter ($D_h$) distribution (Volume (%)) of PNIPAAm$_{72}$-PnP$_{79}$ micelles at 25 °C (●), 35 °C (▲), 40 °C (◆), and 50 °C (①). Run 2.
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Figure S 42. DOX release from a) PNIPAAm$_{72}$-PNP$_{79}$ at 37°C (●) and 20°C (■), PNIPAAm$_{72}$-PMNP$_{78}$ at 37°C (▲) and 20°C (▲), and PNIPAAm$_{72}$-PBNP$_{73}$ at 37°C (●) and 20°C (●). Data points are plotted as a mean with standard deviation (n = 3).
Table S1. LCST (°C) of block copolymers in deionized water.

<table>
<thead>
<tr>
<th>Polymer</th>
<th>Run 1</th>
<th>Run 2</th>
<th>Run 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>PNIPAAm_{72}-PBNP_{73}</td>
<td>34.9</td>
<td>37.9</td>
<td>39.9</td>
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<tr>
<td>PNIPAAm_{72}-PBNP_{26}</td>
<td>41.9</td>
<td>40.9</td>
<td>40.9</td>
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<tr>
<td>PNIPAAm_{72}-PMNP_{78}</td>
<td>39.0</td>
<td>38.0</td>
<td>38.9</td>
</tr>
<tr>
<td>PNIPAAm_{72}-PMNP_{29}</td>
<td>37.9</td>
<td>37.0</td>
<td>39.9</td>
</tr>
<tr>
<td>PNIPAAm_{72}-PNP_{79}</td>
<td>32.0</td>
<td>34.1</td>
<td>32.2</td>
</tr>
<tr>
<td>PNIPAAm_{72}-PNP_{29}</td>
<td>32.9</td>
<td>32.9</td>
<td>31.9</td>
</tr>
</tbody>
</table>

Table S2. LCST (°C) of block copolymers in PBS solution.

<table>
<thead>
<tr>
<th>Polymer</th>
<th>Run 1</th>
<th>Run 2</th>
<th>Run 3</th>
<th>mean ± S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>PNIPAAm_{72}-PBNP_{73}</td>
<td>34.0</td>
<td>33.0</td>
<td>34.0</td>
<td>33.6 ± 0.6</td>
</tr>
<tr>
<td>PNIPAAm_{72}-PBNP_{26}</td>
<td>31.9</td>
<td>32.9</td>
<td>32.1</td>
<td>32.3 ± 0.5</td>
</tr>
<tr>
<td>PNIPAAm_{72}-PMNP_{78}</td>
<td>33.1</td>
<td>33.2</td>
<td>32.1</td>
<td>32.8 ± 0.6</td>
</tr>
<tr>
<td>PNIPAAm_{72}-PMNP_{29}</td>
<td>33.1</td>
<td>33.0</td>
<td>33.1</td>
<td>33.1 ± 0.0</td>
</tr>
<tr>
<td>PNIPAAm_{72}-PNP_{79}</td>
<td>25.0</td>
<td>28.1</td>
<td>26.3</td>
<td>26.5 ± 1.6</td>
</tr>
<tr>
<td>PNIPAAm_{72}-PNP_{29}</td>
<td>28.0</td>
<td>28.1</td>
<td>28.0</td>
<td>28.0 ± 0.0</td>
</tr>
</tbody>
</table>

Table S3. \(D_h\) of micelles (Volume (%)) with PDI in parentheses.

<table>
<thead>
<tr>
<th>Polymer</th>
<th>Run 1</th>
<th>Run 2</th>
<th>Run 3</th>
<th>mean ± S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>PNIPAAm_{72}-PBNP_{73}</td>
<td>101.5 (0.019)</td>
<td>101.5 (0.025)</td>
<td>98.9 (0.050)</td>
<td>100.6 ± 1.5</td>
</tr>
<tr>
<td>PNIPAAm_{72}-PBNP_{26}</td>
<td>55.7 (0.027)</td>
<td>55.3 (0.043)</td>
<td>56.7 (0.034)</td>
<td>55.9 ± 0.7</td>
</tr>
<tr>
<td>PNIPAAm_{72}-PMNP_{78}</td>
<td>91.1 (0.041)</td>
<td>92.7 (0.002)</td>
<td>90.9 (0.038)</td>
<td>91.6 ± 1.0</td>
</tr>
<tr>
<td>PNIPAAm_{72}-PMNP_{29}</td>
<td>80.7 (0.098)</td>
<td>78.4 (0.074)</td>
<td>79.9 (0.068)</td>
<td>79.7 ± 1.2</td>
</tr>
<tr>
<td>PNIPAAm_{72}-PNP_{79}</td>
<td>131.3 (0.125)</td>
<td>138.2 (0.077)</td>
<td>138.2 (0.057)</td>
<td>135.9 ± 4.0</td>
</tr>
<tr>
<td>PNIPAAm_{72}-PNP_{29}</td>
<td>90.4 (0.119)</td>
<td>73.2 (0.131)</td>
<td>85.8 (0.121)</td>
<td>83.1 ± 8.9</td>
</tr>
</tbody>
</table>

Table S4. \(D_h\) of drug-loaded micelles (Volume (%)) with PDI in parentheses.

<table>
<thead>
<tr>
<th>Polymer</th>
<th>Run 1</th>
<th>Run 2</th>
<th>Run 3</th>
<th>mean ± S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>PNIPAAm_{72}-PBNP_{73}</td>
<td>56.6 (0.253)</td>
<td>52.2 (0.256)</td>
<td>58.3 (0.252)</td>
<td>55.7 ± 3.1</td>
</tr>
<tr>
<td>PNIPAAm_{72}-PBNP_{26}</td>
<td>36.0 (0.172)</td>
<td>37.4 (0.156)</td>
<td>35.9 (0.159)</td>
<td>36.5 ± 0.8</td>
</tr>
<tr>
<td>PNIPAAm_{72}-PMNP_{78}</td>
<td>45.4 (0.240)</td>
<td>57.7 (0.236)</td>
<td>56.4 (0.265)</td>
<td>53.0 ± 6.6</td>
</tr>
<tr>
<td>PNIPAAm_{72}-PMNP_{29}</td>
<td>55.0 (0.199)</td>
<td>47.5 (0.201)</td>
<td>65.4 (0.191)</td>
<td>55.9 ± 9.0</td>
</tr>
<tr>
<td>PNIPAAm_{72}-PNP_{29}</td>
<td>78.3 (0.243)</td>
<td>75.3 (0.226)</td>
<td>80.8 (0.108)</td>
<td>78.1 ± 2.8</td>
</tr>
<tr>
<td>PNIPAAm_{72}-PNP_{79}</td>
<td>143.4 (0.141)</td>
<td>141.2 (0.135)</td>
<td>144.7 (0.145)</td>
<td>143.1 ± 1.8</td>
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