

Supporting Information

Morphology and Proton Transport in Humidified Phosphonated Peptoid Block Copolymers

Jing Sun,^{1,2} Xi Jiang,³ Aaron Siegmund⁴, Michael D. Connolly¹, Kenneth H. Downing⁵, Nitash P.

Balsara^{3,6,7*} and Ronald N. Zuckermann^{1,3*}

¹Molecular Foundry, ³Materials Sciences Division, ⁵Molecular Biophysics and Integrated Bioimaging Division, ⁶Environmental Energy Technologies Division, Lawrence Berkeley National Laboratory, Berkeley, CA 94720

²School of Polymer Science and Engineering, Qingdao University of Science and Technology, Qingdao, China 266042

⁴Department of Medicinal Chemistry, Amgen Inc., One Amgen Center Drive, Thousand Oaks, California 91320-1799, United States

⁷Department of Chemical and Biomolecular Engineering, University of California, Berkeley, CA 94720

Figure S1	¹ H NMR spectra of the <i>N</i> -phosphonomethylglycine submonomer precursor and intermediate	2
Figure S2	¹ H NMR spectra of pNeh _n - <i>b</i> -pNpm _m diblock copolymers	3
Figure S3	Electrospray ionization (ESI) mass spectrum of diblock copolymer pNeh ₉ - <i>b</i> -pNpm ₉	4
Figure S4	MALDI mass spectrum of diblock copolymer pNeh ₉ - <i>b</i> -pNpm ₉	5
Figure S5	Thermogravimetric analysis of pNeh ₁₈ - <i>b</i> -pNpm ₁₈	6
Figure S6	DSC endotherms for pNeh ₁₈ - <i>b</i> -pNpm ₁₈	7

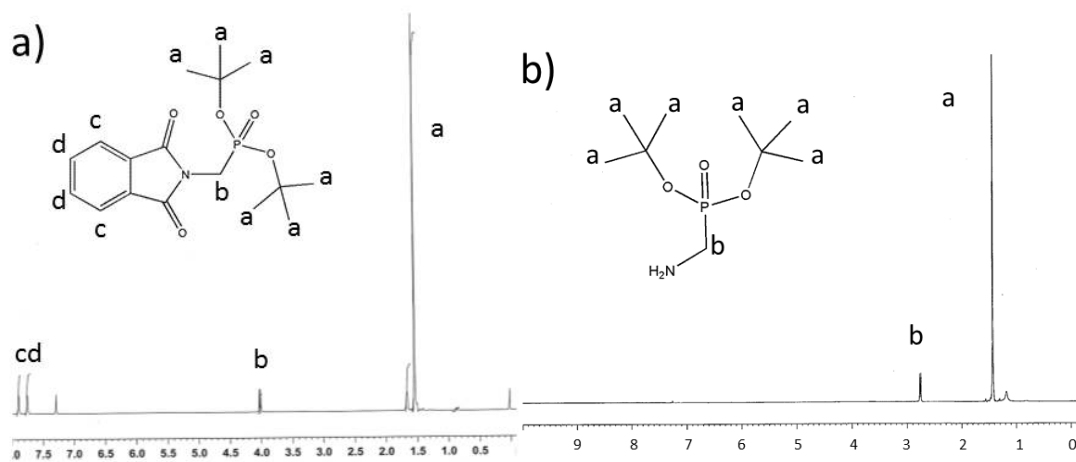


Figure S1. ^1H NMR of the *N*-phosphonomethylglycine submonomer precursor and intermediate (both in CDCl_3): (a) di-*tert*-butyl(phthalimidomethyl) phosphonate and (b) di-*tert*-butyl(aminomethyl)phosphonate.

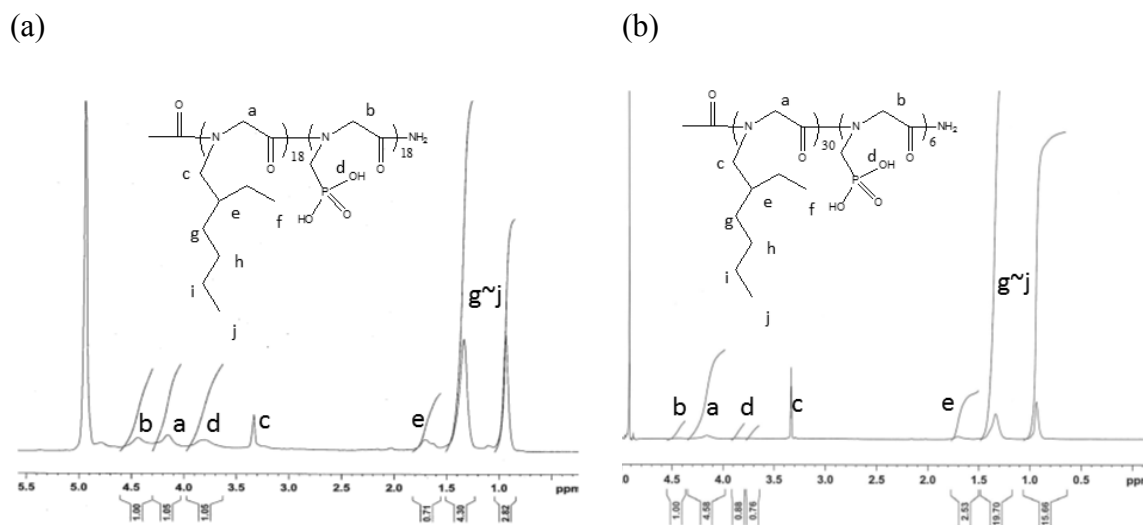


Figure S2. ^1H NMR in CD_3OD of (a) $\text{pNeh}_{18}\text{-b-pNpm}_{18}$ and (b) $\text{pNeh}_{30}\text{-b-pNpm}_6$. The integrations match very well.

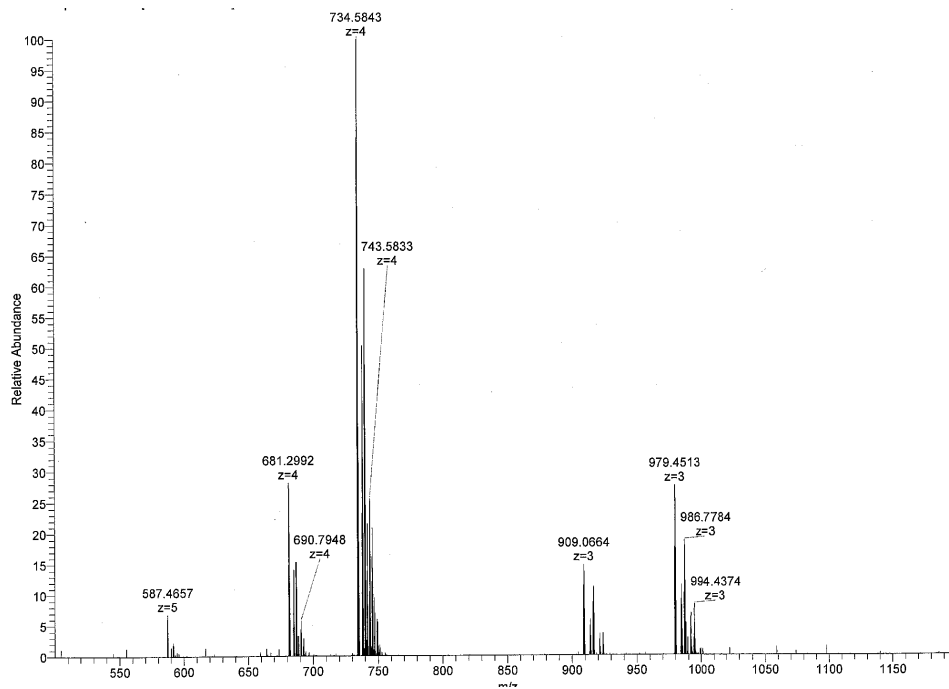


Figure S3. Electrospray ionization (ESI) mass spectrum of diblock copolymer pNeh₉-b-pNpm₉.

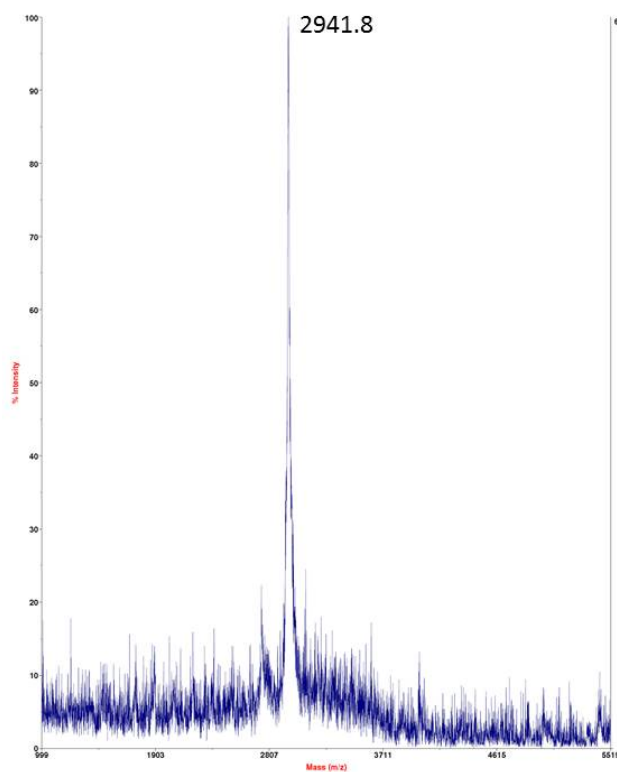


Figure S4. MALDI mass spectrum of diblock copolymer pNeh₉-*b*-pNpm₉. The observed molecular weight is reduced by 1 due to negative mode used.

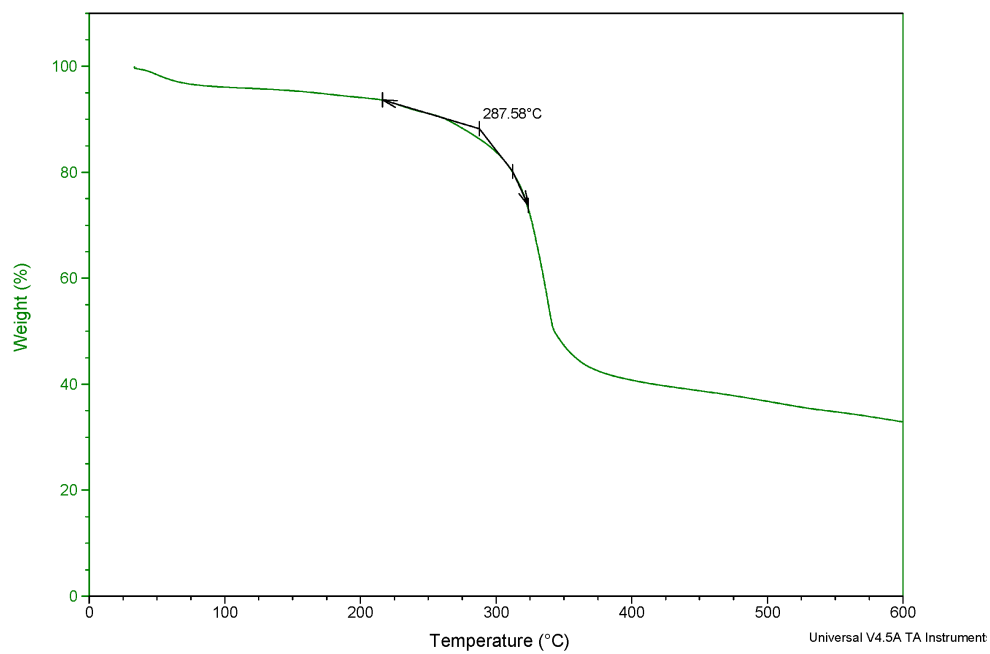


Figure S5. Thermogravimetric analysis of pNeh₁₈-b-pNpm₁₈.

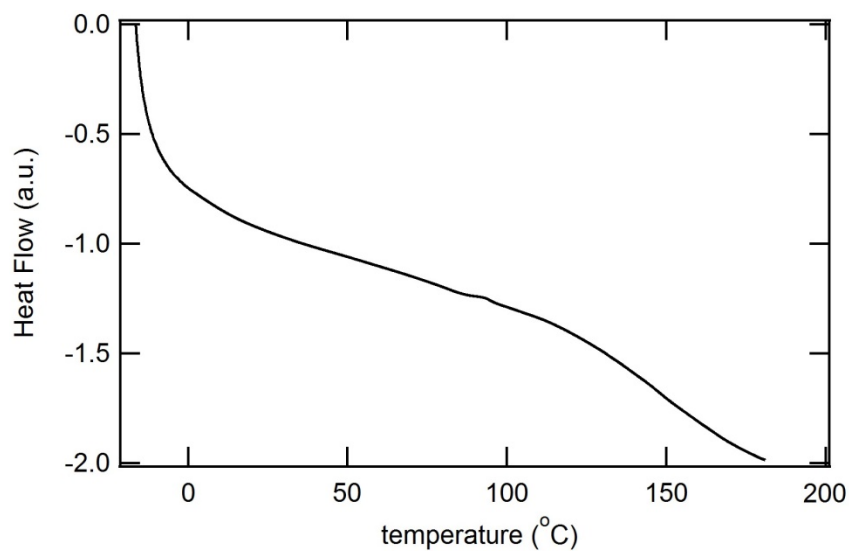


Figure S6. Differential scanning calorimetry (DSC) endotherms for pNeh₁₈-b-pNpm₁₈. Absence of a melting peak indicates an amorphous structure.