

Electronic Supplementary information

Cellulose Grafting by Photoinduced Controlled Radical Polymerisation

Emma Larsson, Samuel Pendergraph, Tahani Kaldéus, Eva Malmström, and Anna Carlmark

Table S1. Properties of grafted filter papers

<i>Sample name^a</i>	<i>Contact angle (θ)^{b, c}</i>	
FP-BiB-PMA ₃₀₀ (1)	142±7	
FP-BiB-PMA ₃₀₀ (2)	131±4	
FP-BiB-PMA ₆₀₀ (1)	135±12	
FP-BiB-PMA ₆₀₀ (2)	126±6	
FP-S-S BiB-PMA ₃₀₀ (1)	126±5	
FP-Cleaved-S-S BiB-PMA ₃₀₀ (1)	N.A.	
FP-Cleaved-S-S BiB-PMA ₃₀₀ (2)	N.A.	
FP-S-S BiB-PMA ₆₀₀ (1)	125±8	
FP-Cleaved-S-S BiB-PMA ₆₀₀ (1)	N.A.	
FP-Cleaved-S-S BiB-PMA ₆₀₀ (2)	N.A.	
FP-poly(α Cl ϵ CL ₂₄ -CO- ϵ CL ₇₆)	136	
FP-poly(α Cl ϵ CL ₄₀ -CO- ϵ CL ₆₀)	105	
FP-poly(α Cl ϵ CL ₇₀ -CO- ϵ CL ₃₀)	102	
<i>Sample name^a</i>	$\theta < \text{LCST}$	$\theta > \text{LCST}$
FP-poly(α Cl ϵ CL ₂₄ -CO- ϵ CL ₇₆)-g-PDEGA(1)	N.A.	114
FP-poly(α Cl ϵ CL ₂₄ -CO- ϵ CL ₇₆)-g-PDEGA(2)	N.A.	101
FP-poly(α Cl ϵ CL ₄₀ -CO- ϵ CL ₆₀)-g-PDEGA(1)	N.A.	89
FP-poly(α Cl ϵ CL ₄₀ -CO- ϵ CL ₆₀)-g-PDEGA(2)	N.A.	99
FP-poly(α Cl ϵ CL ₇₀ -CO- ϵ CL ₃₀)-g-PDEGA(1)	N.A.	88
FP-poly(α Cl ϵ CL ₇₀ -CO- ϵ CL ₃₀)-g-PDEGA(2)	N.A.	95

^aSamples have been named as previously described, FP in front of the sample name indicates grafted filter paper. ^bContact angles were measured 10 s after drop dispersion for all samples. For sample 1-5 and 8 the contact angle determined is an average of 4 measurements. ^cN.A. Not possible to measure.

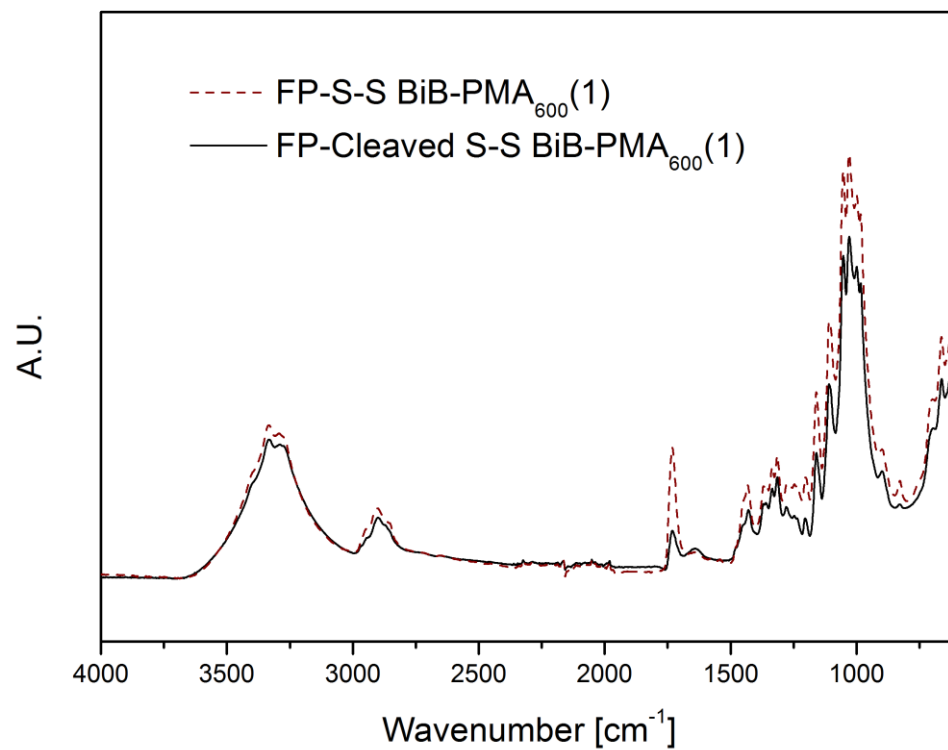


Figure S1. FT-IR of PMA grafted S-S BiB modified filter paper before and after cleavage with DTT.

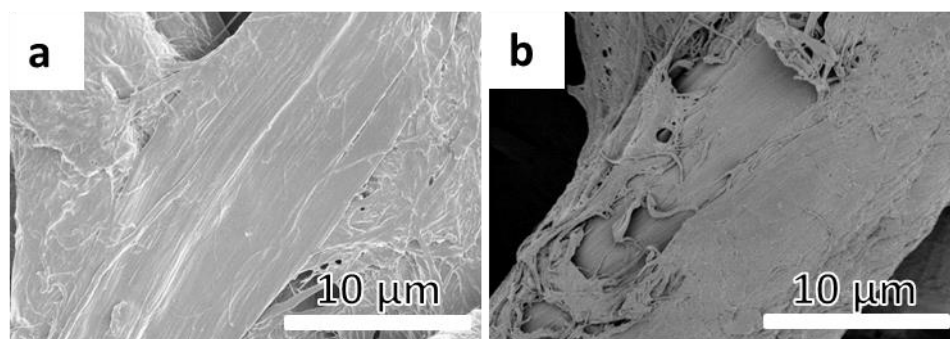


Figure S2. SEM of cellulose substrates (a) S-S BiB-PMA₆₀₀, (b) Cleaved S-S BiB-PMA₆₀₀.

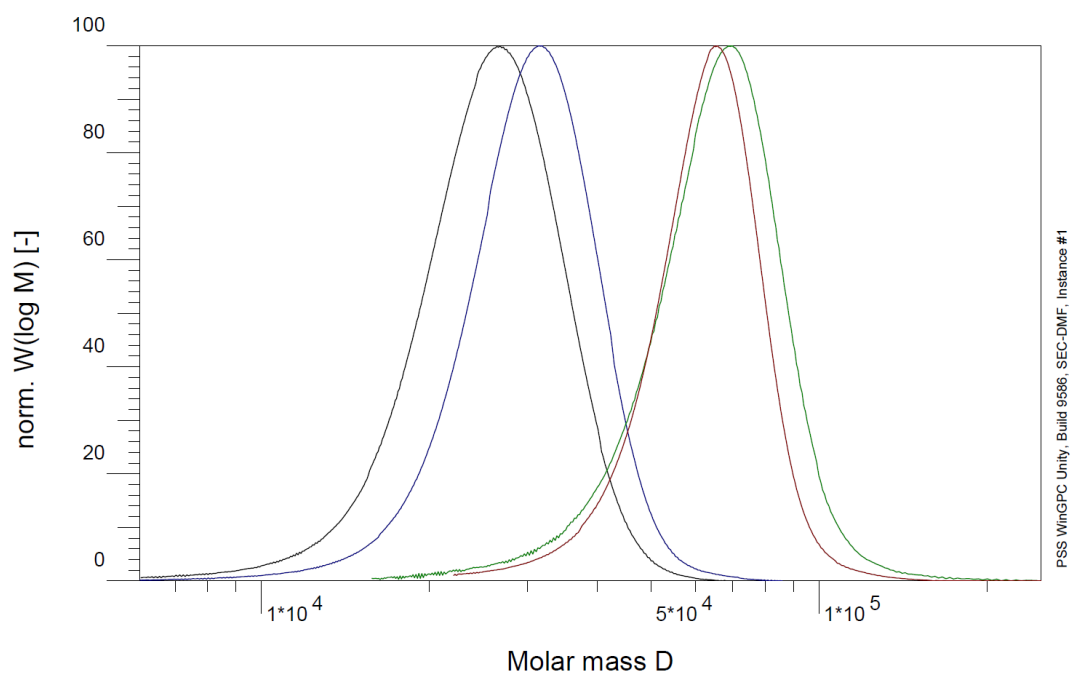


Figure S3. SEC traces for BiB-PMA₃₀₀(1) (black line), BiB-PMA₃₀₀(2) (blue line) BiB-PMA₆₀₀(1) (green line), and BiB-PMA₆₀₀(2) (red line).

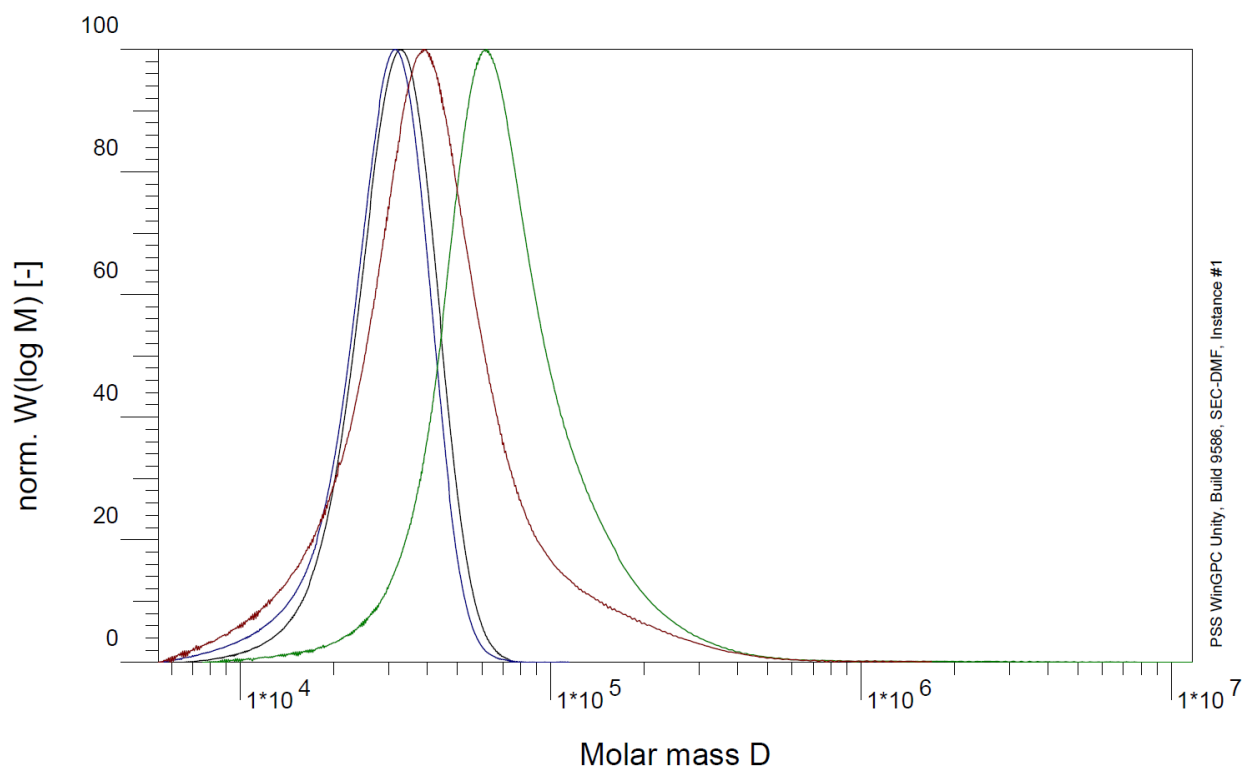


Figure S4. SEC traces for S-S BiB-PMA₃₀₀(1) (black line), Cleaved S-S BiB-PMA₃₀₀(1) (green line), S-S BiB-PMA₃₀₀(2) (blue line), and cleaved S-S BiB-PMA₃₀₀(2) (red line).

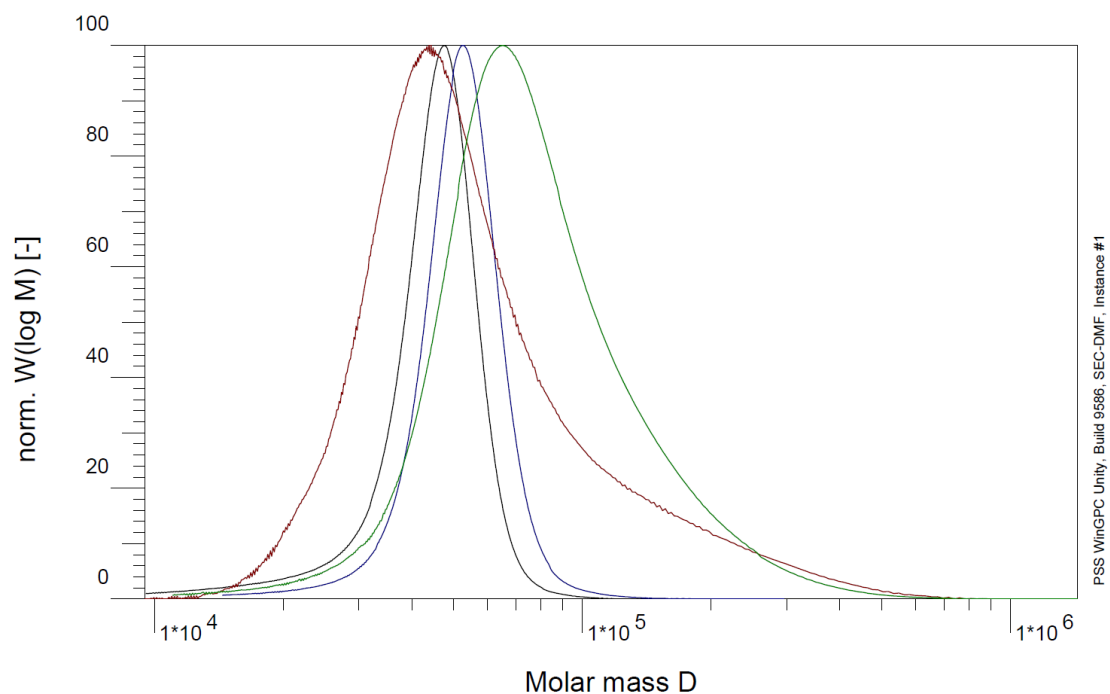


Figure S5. SEC traces for S-S BiB-PMA₆₀₀(1) (black line), Cleaved S-S BiB-PMA₆₀₀(1) (red line), S-S BiB-PMA₆₀₀(2) (blue line), and Cleaved S-S BiB-PMA₆₀₀(2) (green line).

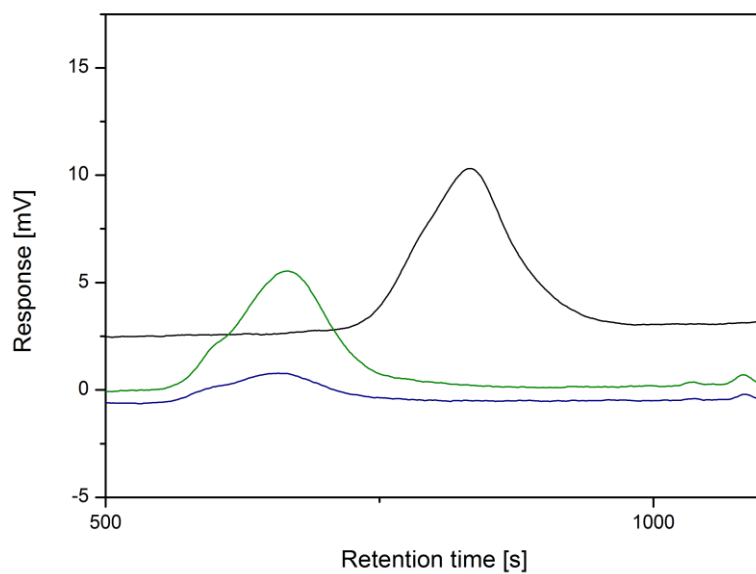


Figure S6. SEC trace for poly(α Cl ϵ CL₂₄-co- ϵ CL₇₆) (black line), poly(α Cl ϵ CL₂₄-co- ϵ CL₇₆)-g-PDEGA(1) (blue line), and poly(α Cl ϵ CL₂₄-co- ϵ CL₇₆)-g-PDEGA(2) (green line)

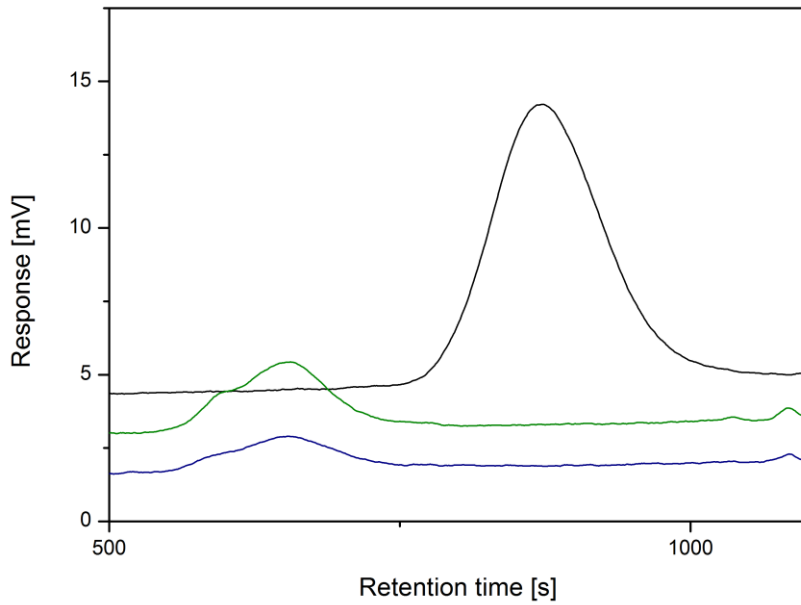


Figure S7. SEC trace for poly(α Cl ϵ CL₄₀-co- ϵ CL₆₀) (black line), poly(α Cl ϵ CL₄₀-co- ϵ CL₆₀)-g-PDEGA(1) (blue line), and poly(α Cl ϵ CL₄₀-co- ϵ CL₆₀)-g-PDEGA(2) (green line)

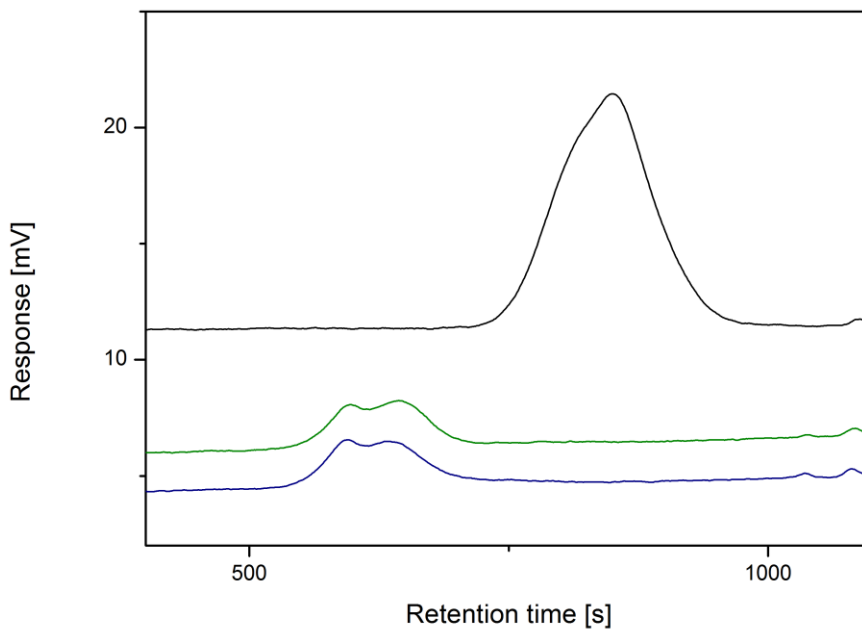


Figure S8. SEC trace for poly(α Cl ϵ CL₇₀-co- ϵ CL₃₀) (black line), poly(α Cl ϵ CL₇₀-co- ϵ CL₃₀)-g-PDEGA(1) (blue line), and poly(α Cl ϵ CL₇₀-co- ϵ CL₃₀)-g-PDEGA(2) (green line).