Electronic Supplementary Information

Enhanced mechanical properties and cell separation with thermal control of PIPAAm-brushed polymer-blend microfibers

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Table S1 Cell culture media

Cells	Culture media [a)]	Additives [b)]
Neonatal normal human dermal fibroblasts: NHDFs	FGM-2	hFGF-β (0.5 mL) Insulin (0.5 mL) FBS (10 mL) Gentamicin/Amphotericin-B (GA) (0.5 mL)
Human umbilical vein endothelial cells: HUVECs	EGM-2	hEGF (0.5 mL) Hydrocortisone (0.2 mL) FBS (10 mL) VEGF (0.5 mL) hFGF-β (2 mL) R3-IGF-1 (0.5 mL) Ascorbic acid (0.5 mL) Heparin (0.5 mL) Gentamicin/Amphotericin-B (GA) (0.5 mL)
Human skeletal muscle myoblasts: HSMMs	SkGM-2	hEGF (0.5 mL); Dexamethasone (0.5 mL) L-glutamine (10.0 mL) FBS (50.0 mL) Gentamicin/Amphotericin-B (GA) (0.5 mL)

a) All cell culture media were purchased from Lonza (Basel, Switzerland). b) Additives added to 500 mL cell culture medium.

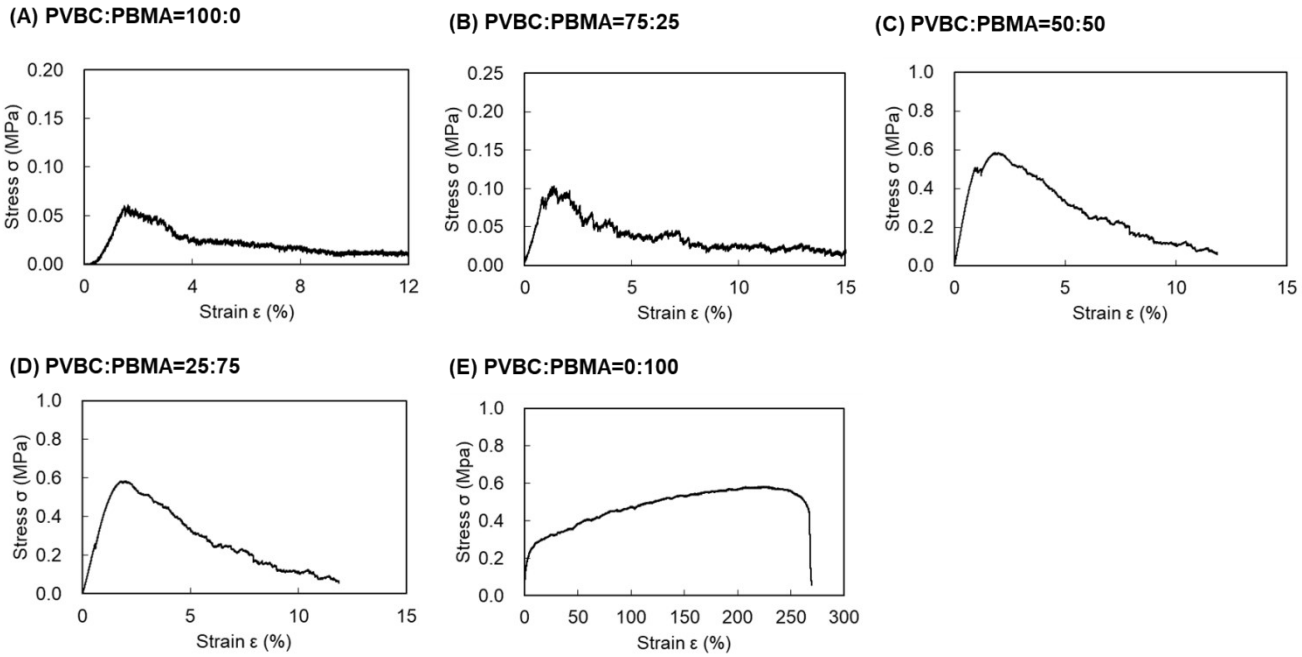

Figure S1. Stress-strain curves of the prepared fibers. (A) PVBC:PBMA = 100:0, (B) PVBC:PBMA = 75:25, (C) PVBC:PBMA = 50:50, (D) PVBC:PBMA = 25:75, and (E) PVBC:PBMA = 0:100.

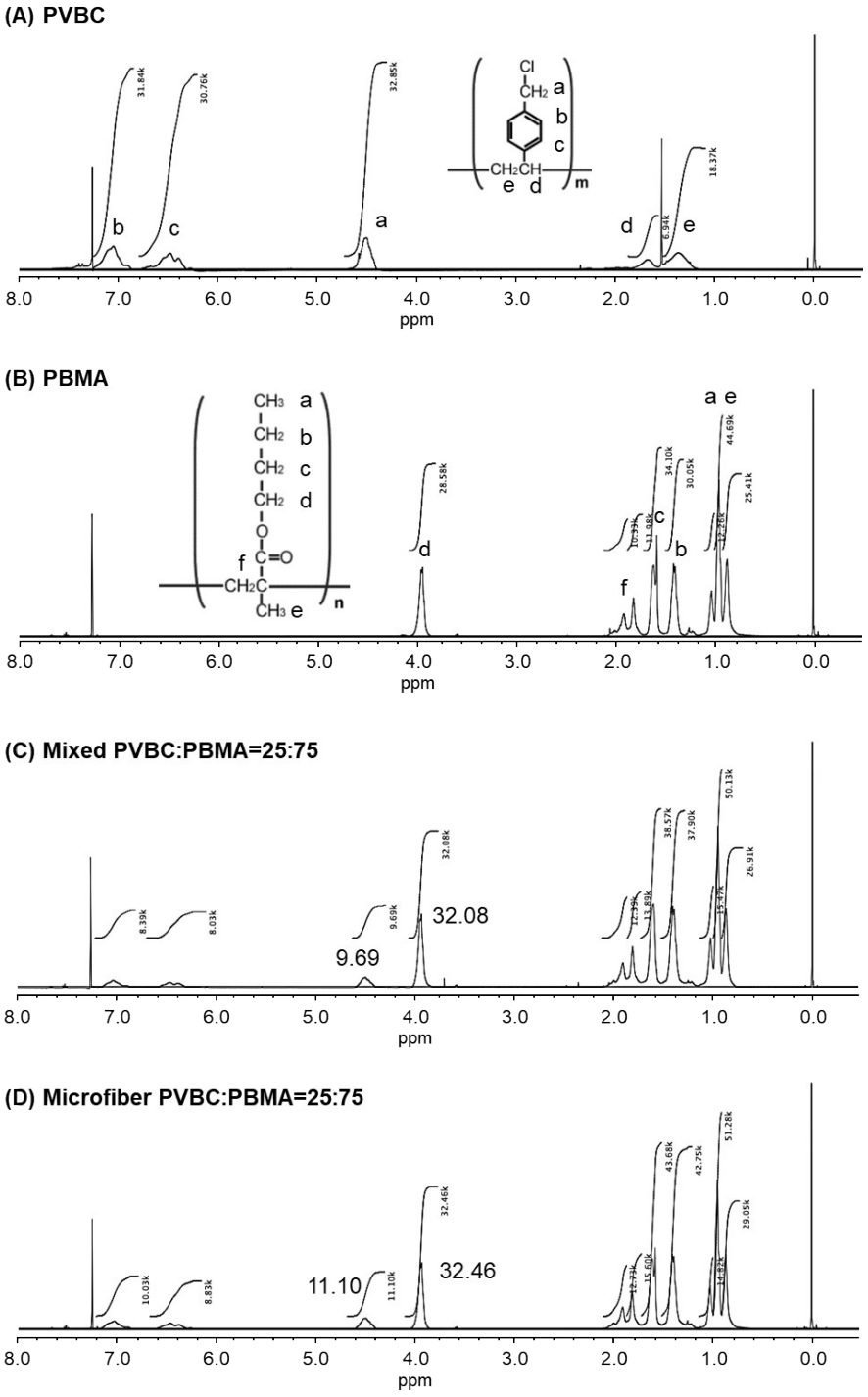

Figure S2. ^{1}H NMR spectra in $CDCl_3$. (A) PVBC, (B) PBMA, (C) mixed PVBC and PBMA at a composition of 25:75, and (D) microfiber composed of PVBC and PBMA at a composition of 25:75.

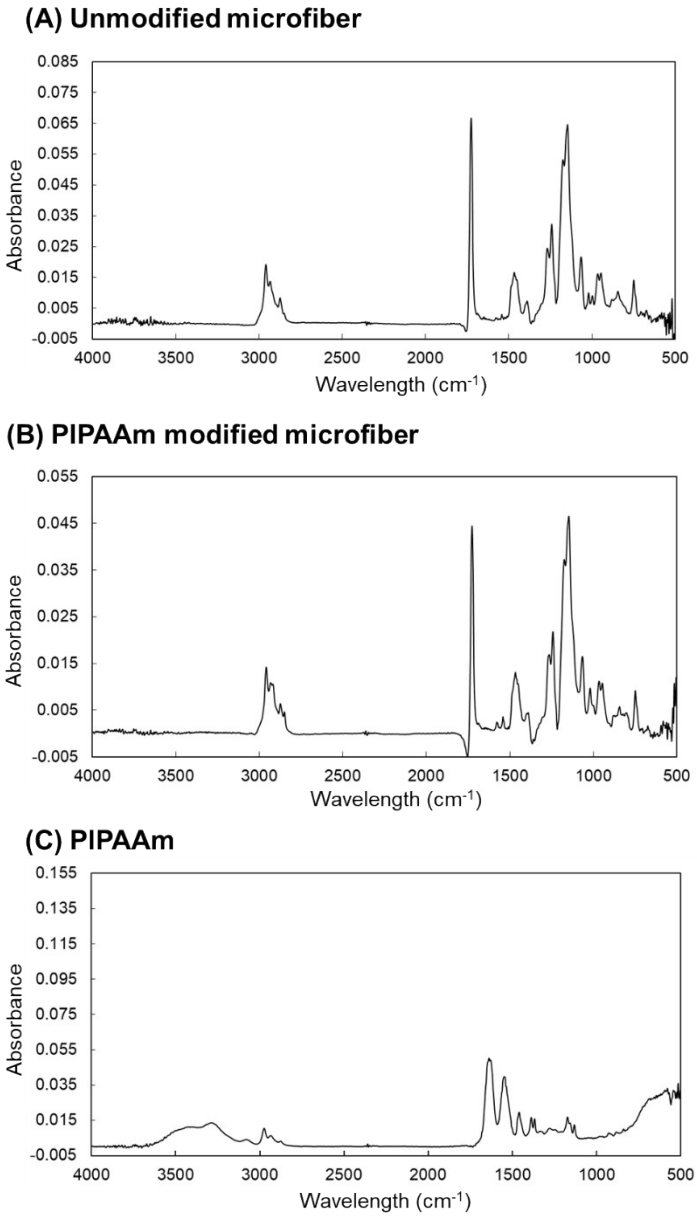

Figure S3. FT-IR spectra of (A) unmodified microfibers, (B) PIPAAm modified microfibers, and (C) PIPAAm.

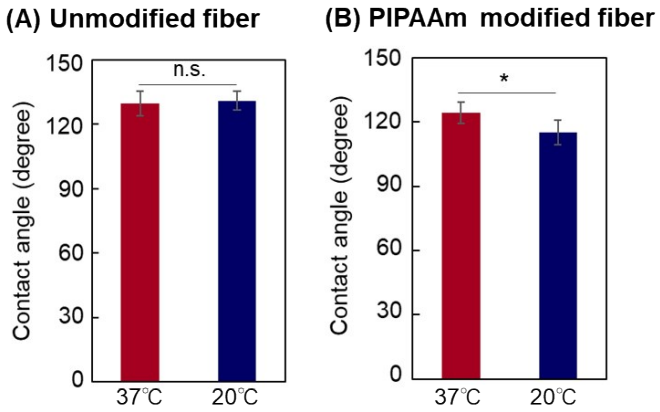

Figure S4 Contact angle values of microfibers (PVBC:PBMA = 25:75) measured by a sessile drop method before (A) and after (B) PIPAAm modification. (* $0.01 < p < 0.05$; n.s. indicates differences that are not significant with $p > 0.05$, $n = 5$).

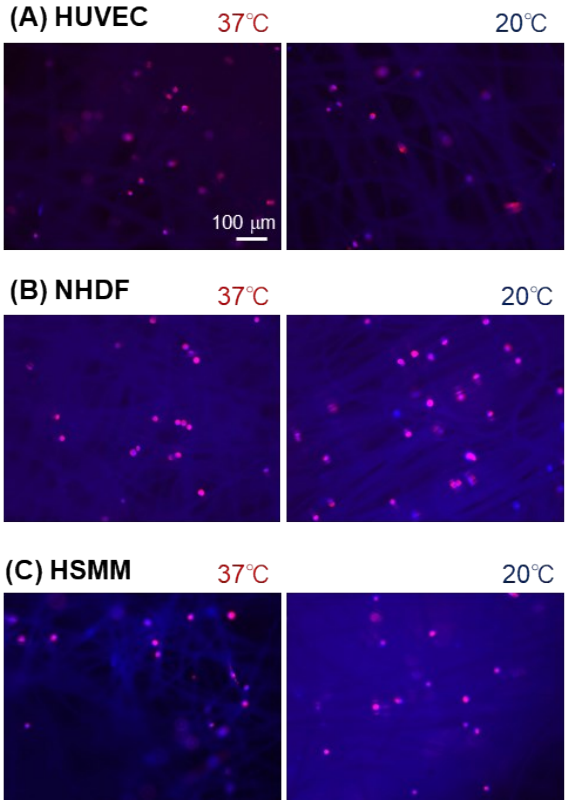

Figure S5 Cell morphologies on unmodified microfibers composed of a PVBC/PBMA polymer blend (PVBC:PBMA = 25:75). (A) HUVEC, (B) NHDF, and (C) HSMM cells. Red: F-actin, blue: nuclei. Microfibers appear as a faint blue background owing to autofluorescence. Images in the left column (37 °C) show cells after incubation at 37 °C for 3 h. Images in the right column (20 °C) were obtained after incubation at 37 °C for 3 h, followed by incubation at 20 °C for 1 h.

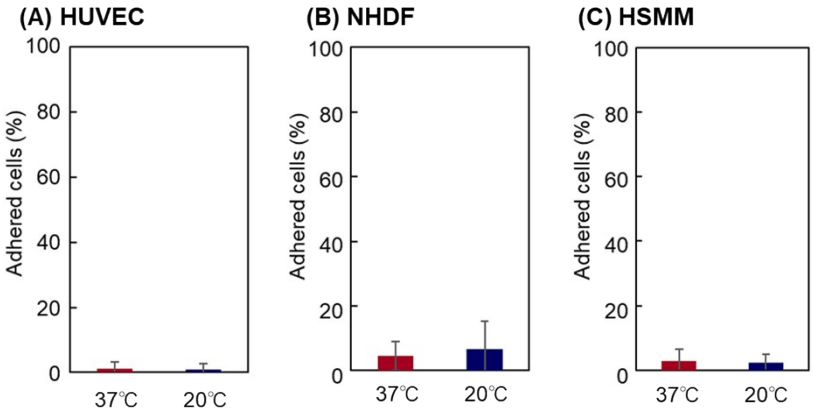

Figure S6 Percentage of adhered cells on unmodified microfibers (PVBC:PBMA = 25:75). (A) HUVEC, (B) NHDF, and (C) HSMM cells. 37 °C: after incubation at 37 °C for 3 h. 20 °C: after incubation at 37 °C for 3 h, followed by incubation at 20 °C for 1 h. (n = 3).

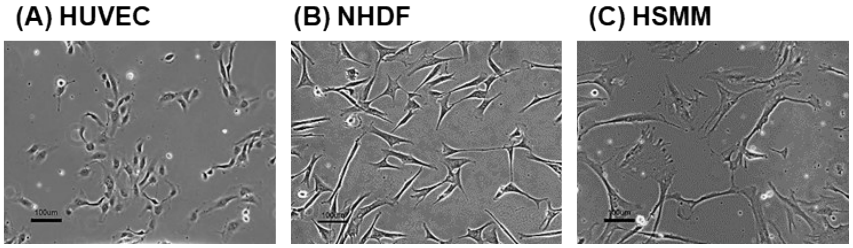

Figure S7. Cell morphology on polystyrene tissue culture dishes visualized using phase contrast microscopy. Scale bar: 100 μm.

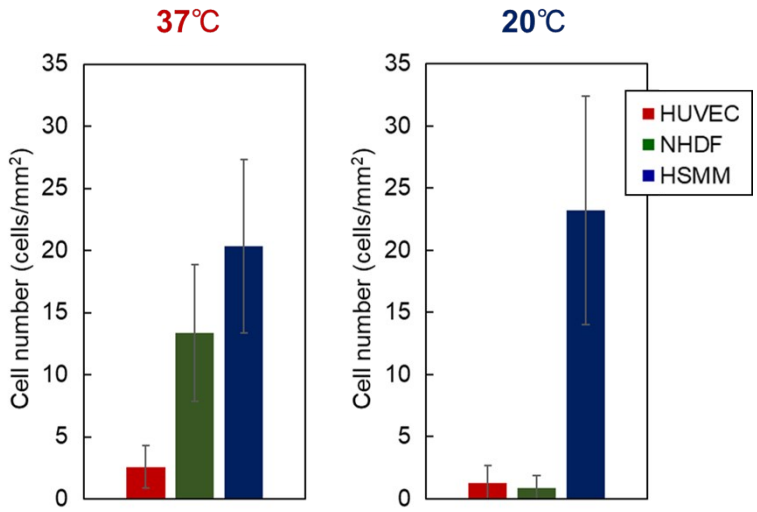

Figure S8. Cell number per unit area on PIPAAm-modified microfibers. 37 °C: after incubation at 37 °C for 3 h. 20 °C: after incubation at 37 °C for 3 h, followed by incubation at 20 °C for 1 h.