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Supporting Information

Controllable Kinematics of Soft Polymer Actuators Induced by Interfacial Patterning

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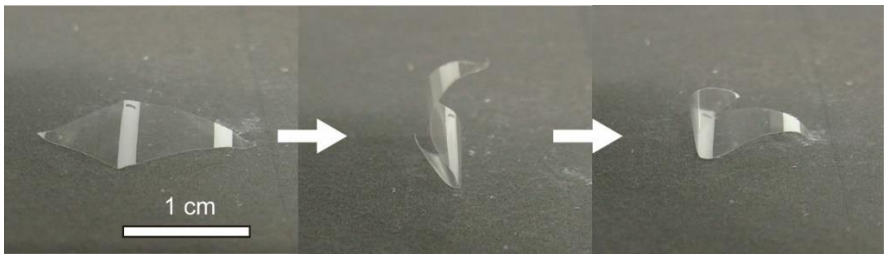

Figure S1. Snapshots showing the wriggling motion of soft actuator that was patterned with asymmetric structures.

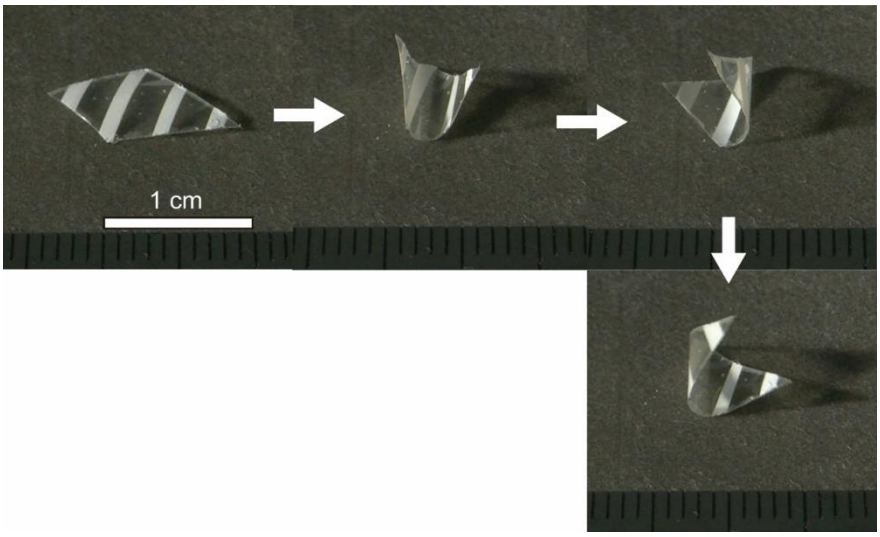

Figure S2. Snapshots showing the in-situ wiggling motion of the soft actuator that was composed of dense patterning structure (the spacing of TiO_2 patterns was increased 2.0 mm).

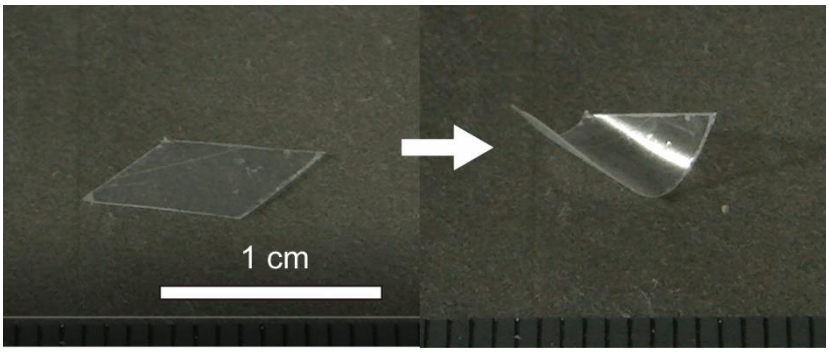

Figure S3. Simple bilayer of PVDF/PS could not showing regular wriggling or wiggling motion, and only deformed irregularly in response to acetone vapors.

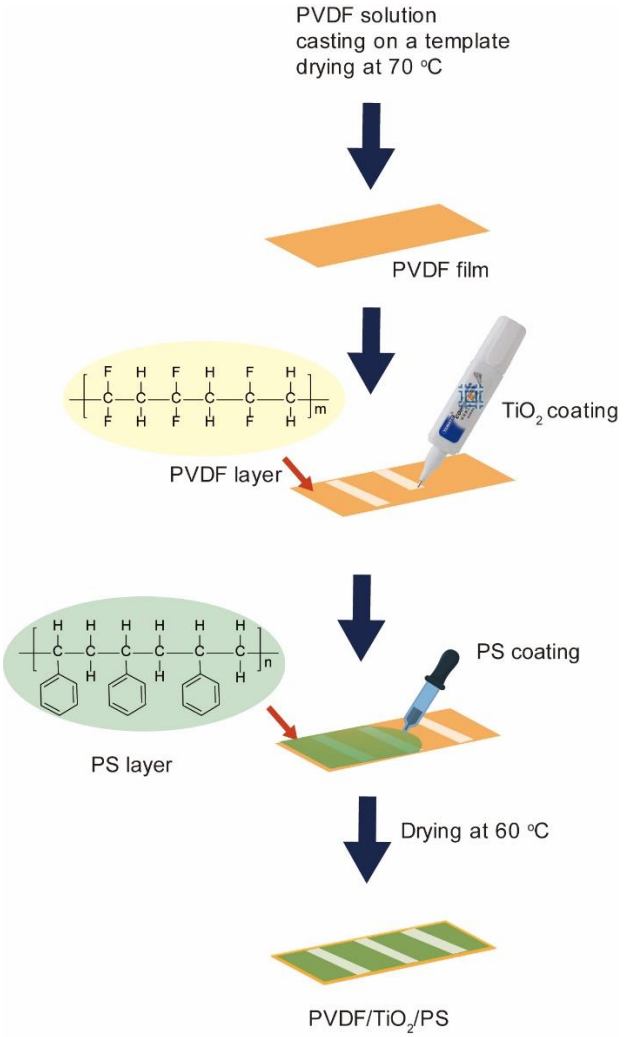

Figure S4. Sketch showing the preparation of PVDF/TiO_2/PS film.

Table S1. Comparation on stimuli-responsive soft polymer actuators in this and other works.

Systems	Actuation Types	Methods	Materials	Stimuli
This work	Wiggling and wriggling	Interfacial patterning	PVDF/TiO_2/PS	Acetone vapors
Ref-4	Twisting	Surface patterning	SPMPC/Fe_3O_4	Magnetic fields
Ref-6	Curling and twisting	Surface patterning	GO/BOPP	Light and humidity
Ref-7	Twisting	Surface patterning	PVDF/PVA	Acetone vapors
Ref-10	Bending and curling	Surface patterning	PVDF	Acetone vapors
Ref-17	Twisting and curling	Surface patterning	LC	UV light
Ref-24	Multimodal motion	Magnetic patterning	Ecoflex 00-10/ NdFeB	Magnetic fields
Ref-37	Twisting and bending	Fibers alignments	CNTs/PIL	Acetone vapors
Ref-43	Folding and twisting	Surface patterning	PVDF/SA/Ca	Light and humidity

Supplementary Movies

Movie S1. Clockwise self-wiggling rotational movements of the actuator with the TiO_2 patterns aligned at –60° to its long axis. The video is shown at five times the real speed.

Movie S2. Wiggling and wriggling forward motion of the actuator that has a gap at the end. The video is shown at five times the real speed.

Movie S3. Wiggling cycles in situ of the rhombic soft robot. The video is shown at two times the real speed.

Movie S4. Wiggling and wriggling motion of the asymmetric soft robot. The video is shown at two times the real speed.

Movie S5. Application of the actuator for cargo transport by converting vapors to mechanical work. The video is shown at ten times the real speed.