

ELECTRONIC SUPPLEMENTARY INFORMATION

Humidity-responsive actuators from integrating liquid crystal networks in an orienting scaffold

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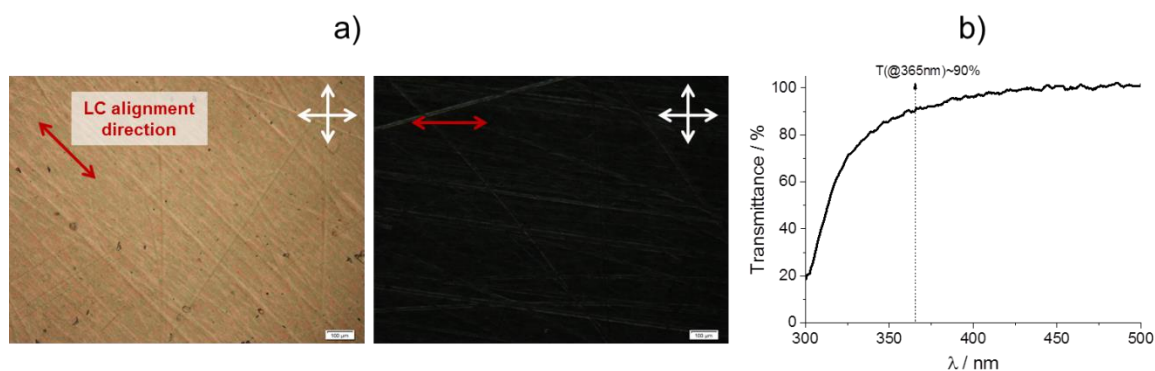


Figure S1. a) Polarized optical images and b) transmittance spectrum of the reinforced liquid crystal network. Crossed white arrows correspond to polarizer and analyzer.

Table S1. Mechanical characterization of the anisotropic materials involved in the study in direction perpendicular to liquid crystal alignment.

	E (GPa)	ϵ_b (%)	U_T(MJm⁻³)
Liquid crystal network	1.22	9	3.52
Porous polypropylene	0.28	137	13.46
Reinforced liquid crystal network	0.70	2	0.15

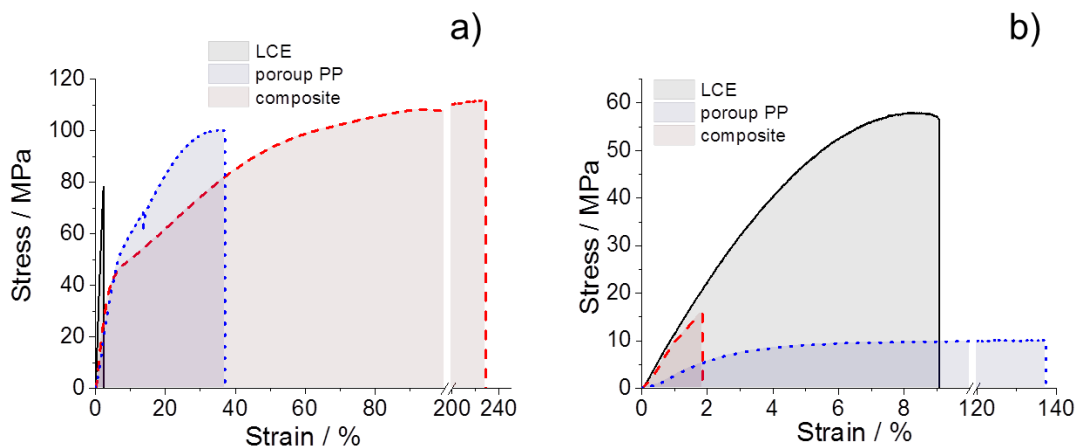


Figure S2. Tensile curves of the materials involved in the study measured in direction a) parallel and b) perpendicular to liquid crystal alignment. Slope of the tensile curve corresponds to elastic modulus and area under the curve is ultimate toughness.

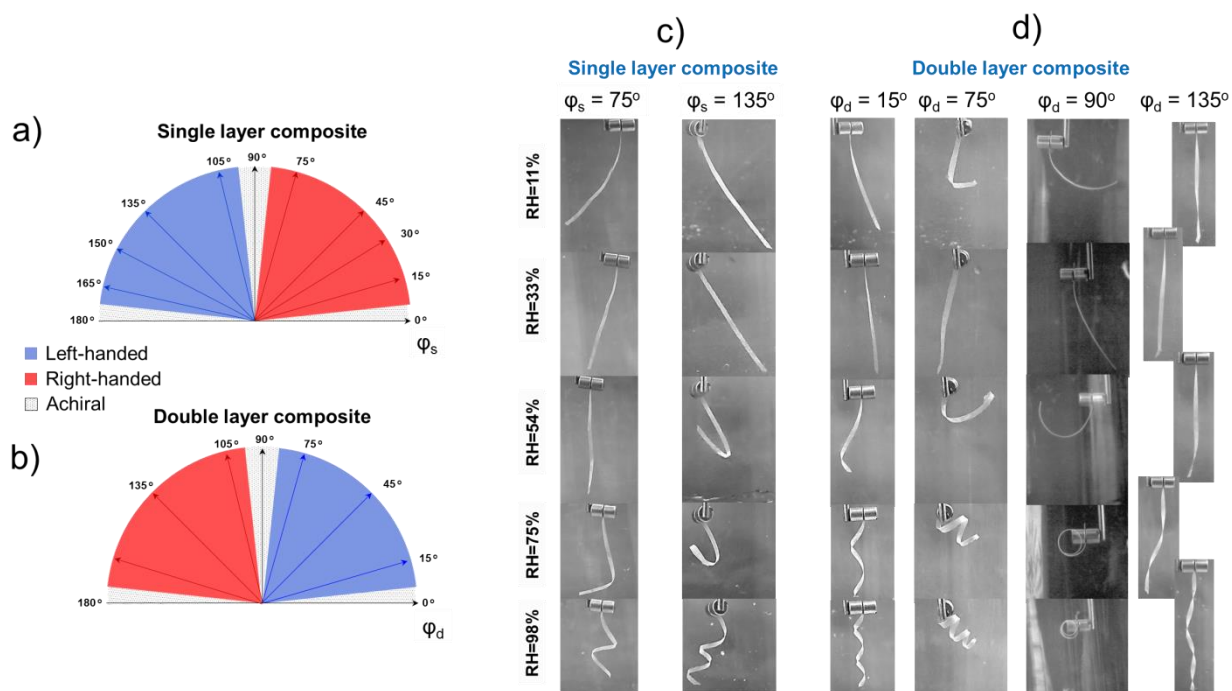


Figure S3. Summarized diagram of the shapes of a) single and b) double layered composite ribbons at 98% humidity. Humidity-induced shape changes of c) single and d) double layered composite

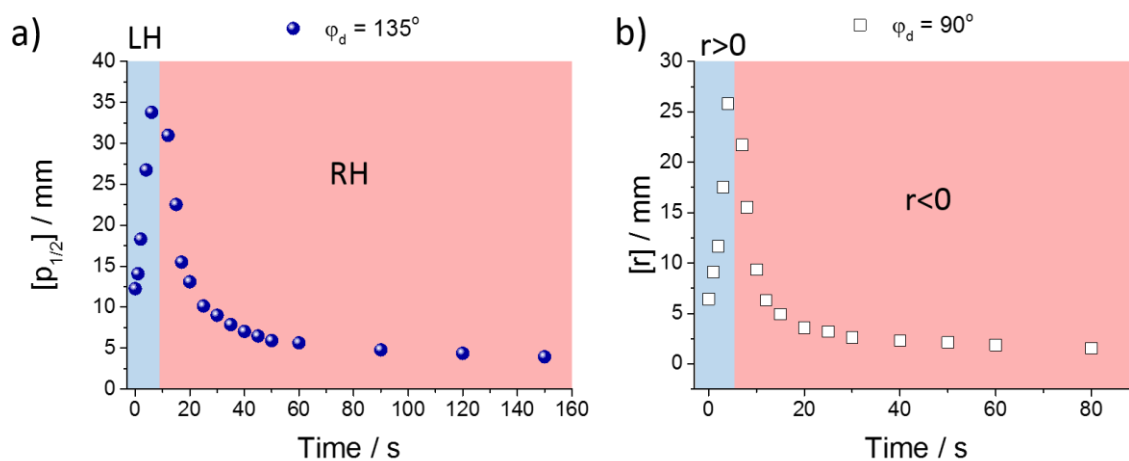


Figure S4. Time evolution of geometrical parameters (irrespective to sign of curvature/handedness) of double layer ribbon cut at (a) 135° and (b) 90° after rapid change of environmental humidity from 11% to 98%. LH and RH corresponds to left- and right-handed shape.

Video S1. Real time actuation of the single layer composite ribbon cut at 135° upon changing humidity from 11% to 98%.

Video S2. Real time actuations of the double layer composite ribbons cut at 135° and 75° upon changing humidity from 11% to 98%.