4D printing of unaligned LCE: a facile approach to print photo mobile polymers

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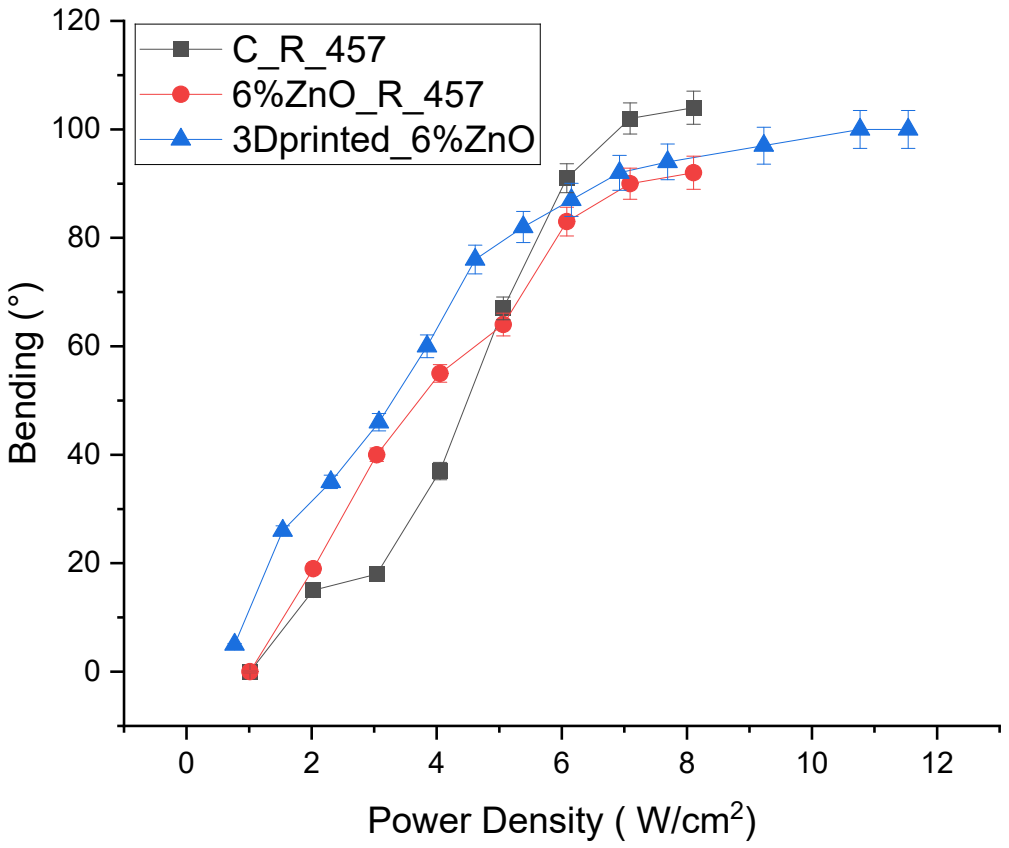
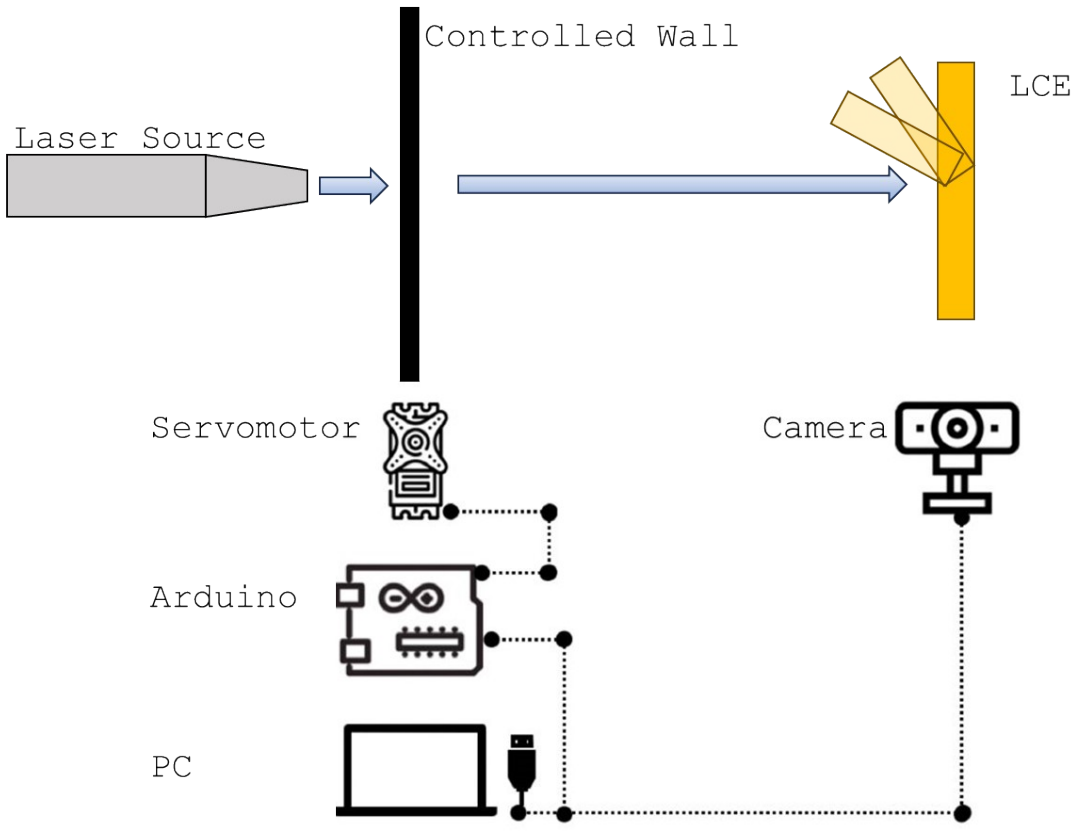
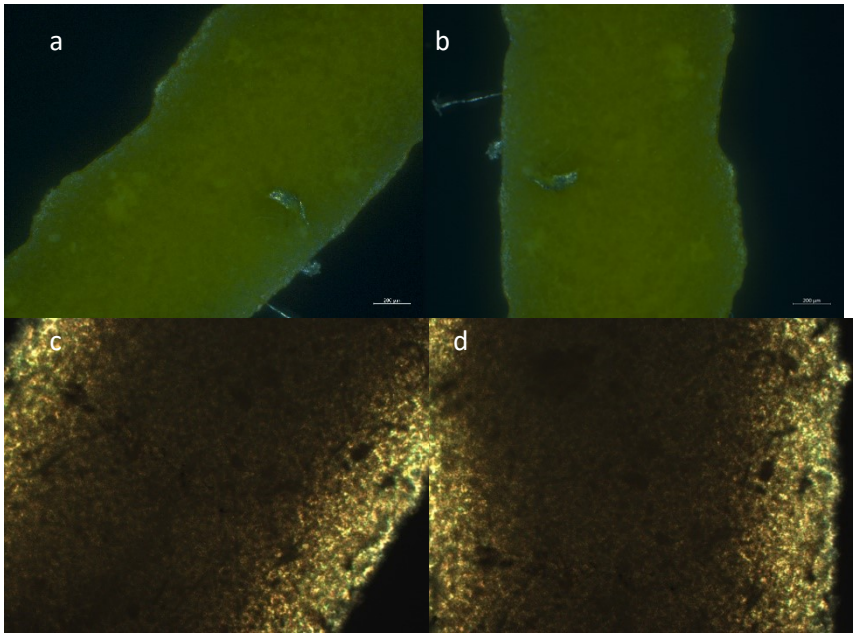


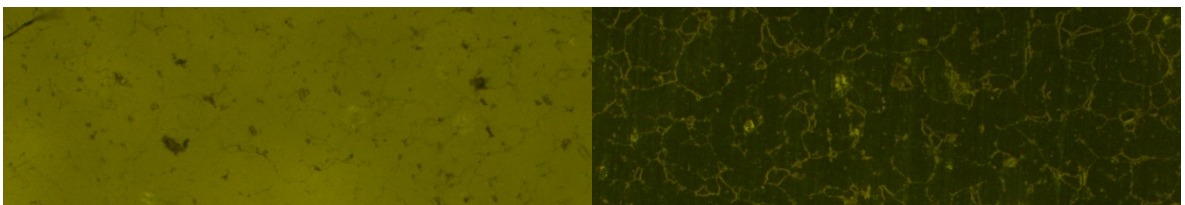
Supplementary Figure 1. Comparison between rubbed control, rubbed 6%ZNO with 3D printed 6%ZnO sample.



Supplementary Figure 2. Set-up for the characterization of bending and speed of LCES and 3D printed materials



Supplementary Figure 3. Pictures of one of the sun-like printed arms acquired with polarized microscopy showing the inability of the material to rotate the polarized light hence the absence of long-range organizational alignment. a&b) the pictures were taken using a 5x objective c&d) the images were taken with a 50x objective.



Supplementary Figure 4. Pictures of photo-mobile polymer synthesised using coated and rubbed cells taken in polarized microscopy. It is possible to see that the material under polarized light block the light by putting the respective samples at 45 degrees or let is pass when it is parallel to the polarizers