Supporting online material

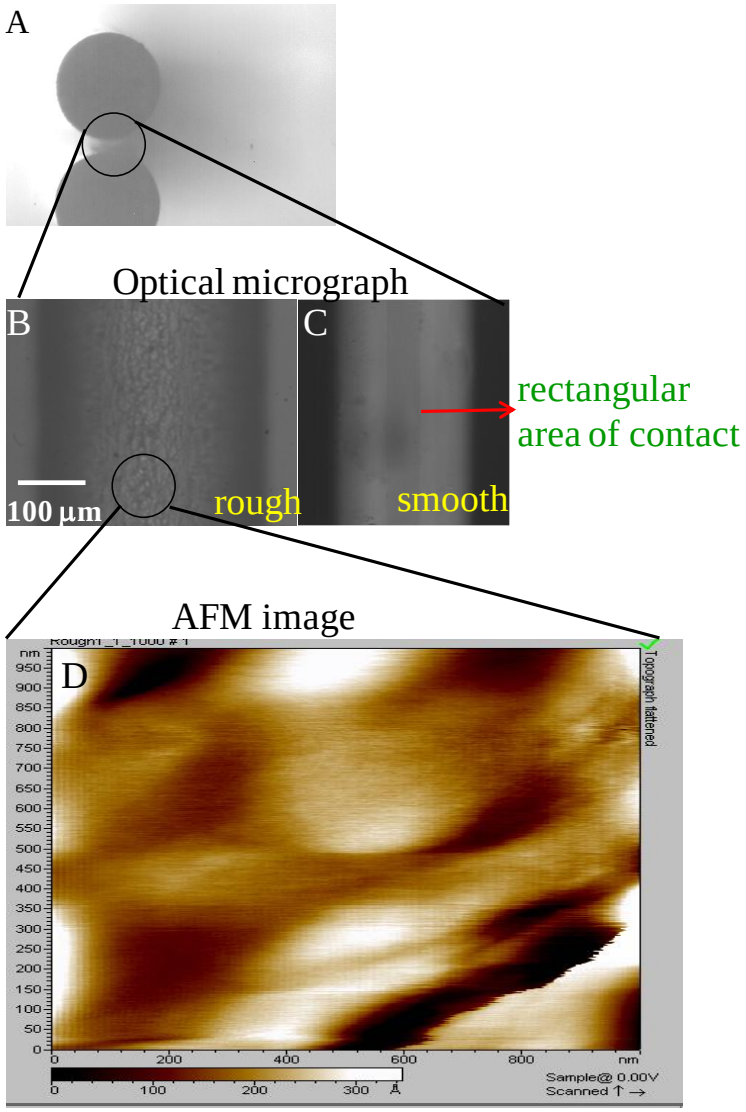

Figure S1. A. Optical micrograph of side view of a PDMS cylinder placed horizontally on a glass substrate. B and C. Optical micrographs of the area of contact between the substrate and the cylinder having rough and smooth surface respectively. D. Atomic Force Microscope (AFM) image of the rough surface of a cylinder.

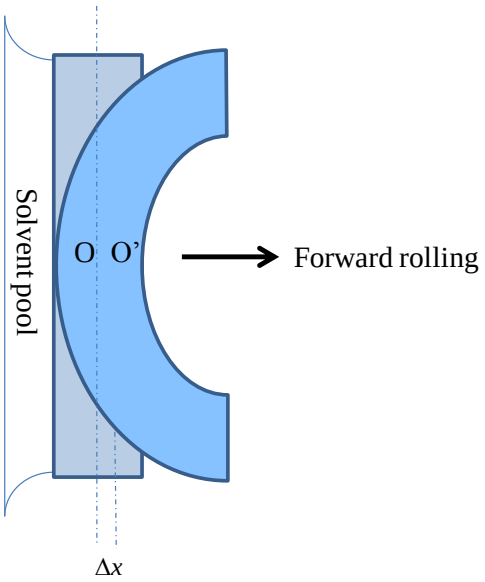

Figure S2. Schematic shows bending of a cylinder followed by asymmetric swelling in a pool of solvent and the resultant change in the position of the centre of mass.

Captions of movies:

Movie S1. A cylinder of diameter 870 μm, length 10mm is enabled to roll up a substrate inclined at angle 31^o. Here the substrate is not the silanized microscope glass slide as used in all our experiments presented in the manuscript, but in order to use a rough surface, we attach a strip of scotch tape to the glass slide so that the back side of the tape is used for carrying out the experiment. The cylinder is made to roll up the plane on application of 3μl of heptanes at which 1mm/sec velocity is achieved.

Movie S2. A cylinder of diameter 870 μm, length 10mm and weight ~5mg drags a portion of a ball pin of weight ~18mg on a silanized microscope glass slide placed horizontally. 2μl of hexane is released at the rear side of the cylinder. The rolling velocity is calculated to be 2.5 mm/sec.