Electronic Supplementary Material (ESI) for Journal of Materials Chemistry B.

Supporting Information

Strong and conductive chitosan-reduced graphene oxide nanocomposites for transdermal drug delivery

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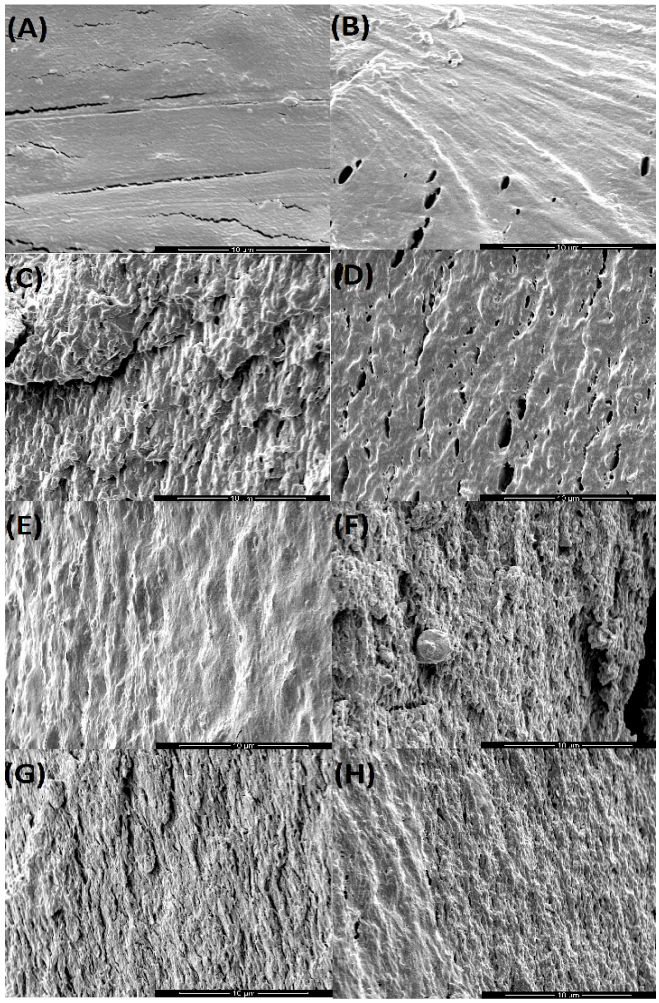

Figure S1: Scanning electron microscopy micrographs of the fracture surface of chitosan-reduced graphene oxide (rGO) nanocomposites with (A) 0 wt.%, (B) 0.25 wt.%, (C) 0.5 wt.%, (D) 1 wt.%, (E) 2 wt.%, (F) 5 wt.%, (G) 7 wt.%, and (H) 10 wt.% rGO. Scanning electron microscopy analysis of the gold sputter coated fracture surface of the nanocomposite films was achieved with an F.E.I. Inspect F50 with an accelerating voltage of 5 kV.

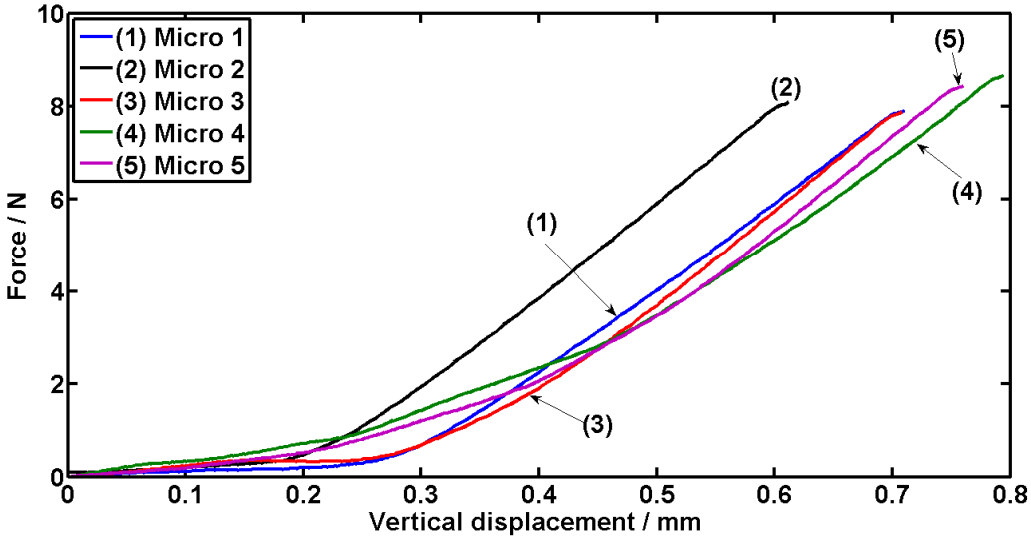

Figure S2: Compression test curves for microneedle arrays created from chitosan and 2 wt.% rGO – fluorescein sodium nanocomposites.

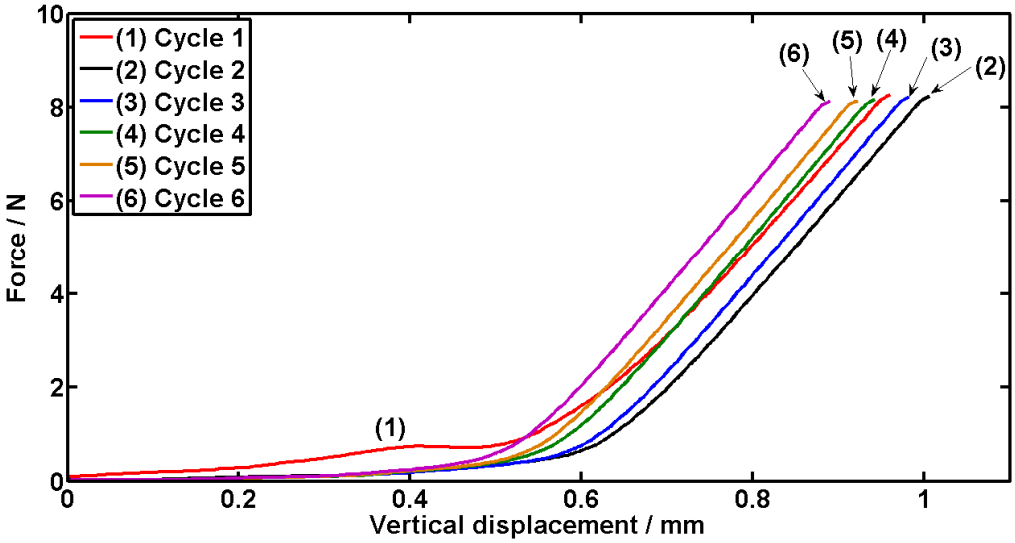

Figure S3: Repeated cycling of compressive loads on one microneedle array, showing that the microneedles do not succumb to failure even after 6 load cycles.

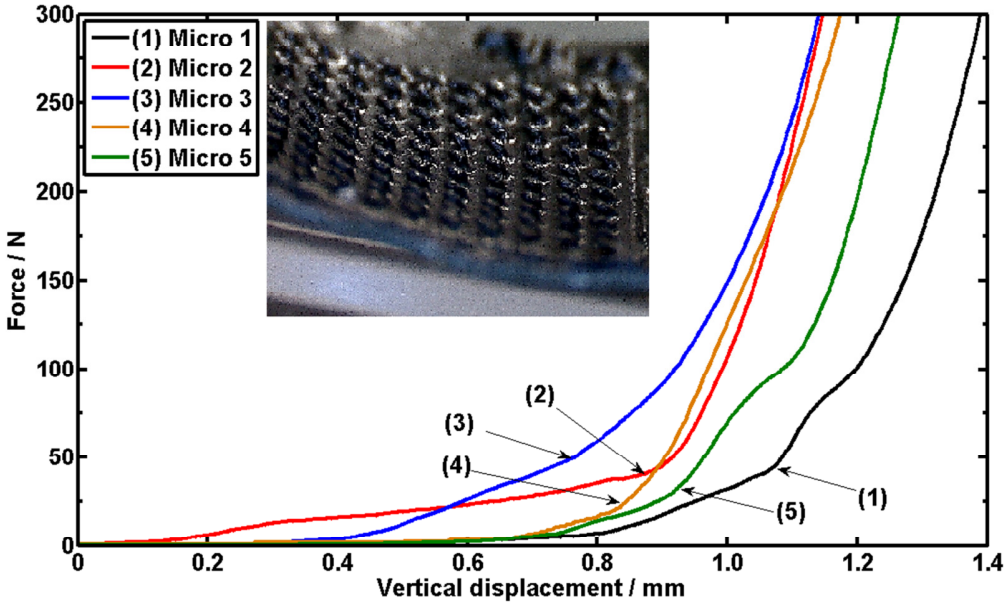

Figure S4: Compression testing to failure of microneedle arrays using a 1 kN load cell with no limitation on maximum loads or minimum depths. The point where the microneedles are believed to have fully failed is indicated by the relevant arrow. After this point, the individual microneedles are being crushed to a horizontal position after having failed by bending means. (Inset) One of the fully failed microneedle arrays can be seen with the individual needles at an orientation closer to horizontal than to vertical.