Electronic Supplementary Information for

Large-Scale Assembly of Highly Sensitive Si-based Flexible Strain Sensor for Human Motion Monitoring

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Supplementary figures

**Fig. S1** The SEM image of the as-synthesized silicon nanowires.

**Fig. S2** The SEM image of silicon nanowires after removing the outside oxide shell with hydrofluoric acid solution.
Fig. S3 (a) XRD patterns of the as-synthesized silicon nanowires. The diffraction peaks were determined referring to JCPDS 77-2107 and JCPDS 02-0709. (b) A typical HRTEM image of silicon nanowires after removing the outside oxide shell with hydrofluoric acid solution.

Fig. S4. The plot of the relative resistance change ($\Delta R/R_0$) versus cubic strain ($\varepsilon^3$).
Fig. S5  The relative resistance change versus dynamic stretching from 0 strain to the stretchable limit (about 66% in this sample). Indeed, we also found the maximum stretchable limit could be 70% on other devices.

Fig. S6  Plot of the width of the gap in Fig. 4 of the main text versus the exerted strain.