

## Gold Nanoparticle-Cellulose/PDMS Nanocomposite: A Flexible Dielectric Material for Harvesting Mechanical Energy

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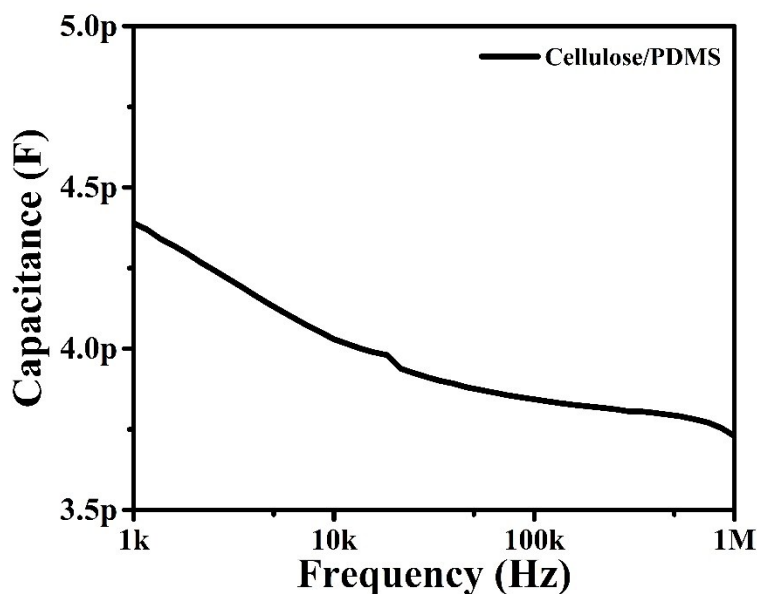
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Piezoelectric coefficient measurement:

The piezoelectric coefficient ( $d_{33}$ ) value of the Cellulose/PDMS was measured to be 8 pC/N. The  $d_{33}$  coefficient was measured using a SINOCERA YE2730A  $d_{33}$  Meter under the condition of constant applied force of 0.5 N and frequency at 50 Hz.



**Figure S1.** The variation of capacitance versus frequency curve of the Cellulose/PDMS composite used for HPNG fabrication.

The  $d_{33}$  value of Cellulose/PDMS was calculated from the capacitance vs frequency characteristics, which is shown in Figure S1. The capacitance vs frequency characteristics was measured using a NF ZM2376 LCR Meter.

To verify the measured  $d_{33}$  value a frequency dependent capacitance measurement was carried out using a NF ZM2376 LCR Meter. The following equation was used to calculate the  $d_{33}$  values:

$$d_{33} = \frac{V \times C}{F} \quad \text{-----}$$

### S1

Where, V is the output voltage from the Cellulose/PDMS which is found to be 6V, C is the capacitance of the Cellulose/PDMS at 1000 Hz frequency which is found to be 4.4 pF and F is the Force (3N) applied on the nanocomposite. The  $d_{33}$  coefficient of the Cellulose/PDMS was found to be 8.8 pC/N.