

## Supplementary Information

### Unveiling the robust and high temperature stable two-dimensional ZnAl layered double hydroxide nanosheets based flexible triboelectric nanogenerator

Ritu<sup>1,3,4</sup>, Simadri Badatya<sup>2,4</sup>, <sup>4</sup>, Manoj Kumar Patel<sup>1,4,\*</sup>, Manoj Kumar Gupta<sup>\*2,4</sup>

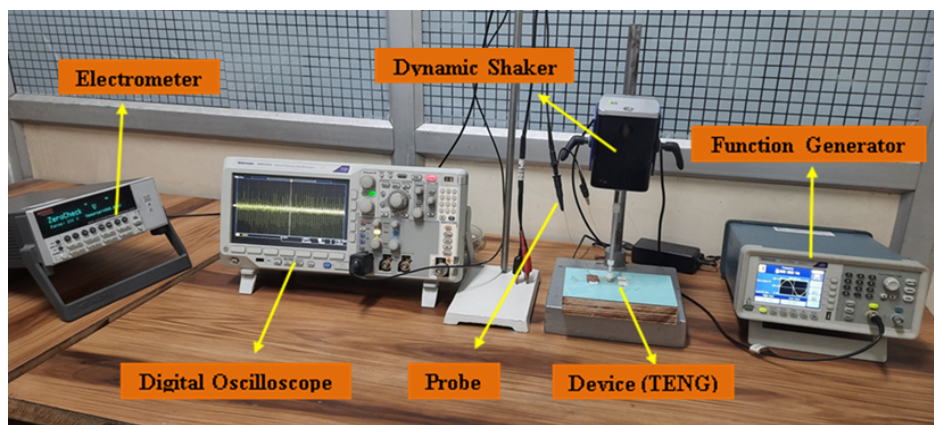
<sup>1</sup>Manufacturing Science and Instrumentation Division (MSI), CSIR-Central Scientific Instruments Organisation, Chandigarh, 160030, Chandigarh, India

<sup>2</sup>Green Engineered Materials and Additive Manufacturing Division (GEM&AM), CSIR-Advanced Materials and Processes Research Institute, Bhopal, 462026, Madhya Pradesh, India

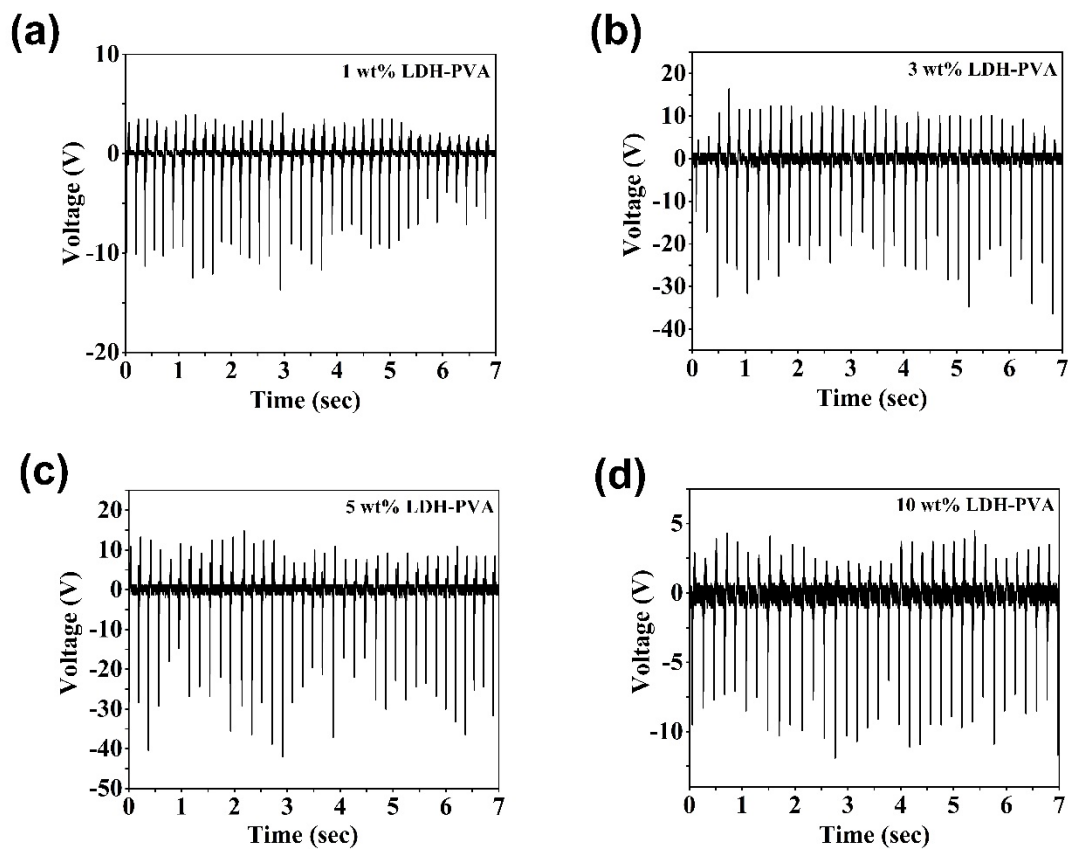
<sup>3</sup>Department of Manufacturing, Materials and Mechatronics (MM&M), School of Engineering, RMIT University, Melbourne, VIC 3000, Australia

<sup>4</sup>Academy of Scientific and Innovative Research (AcSIR), Ghaziabad, 201002, Uttar Pradesh, India

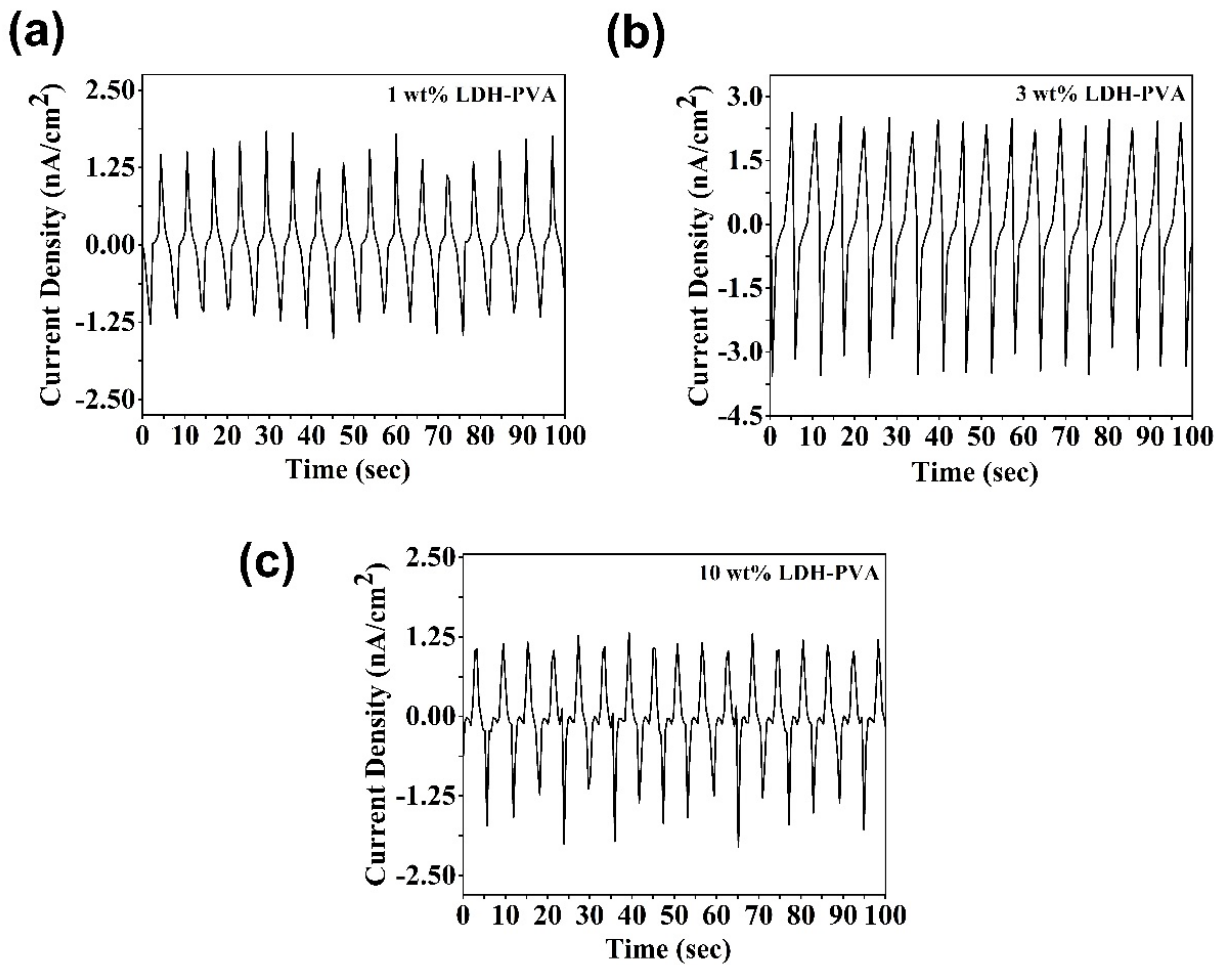
\*Corresponding author email: [\\*mkgupta@ampri.res.in](mailto:*mkgupta@ampri.res.in) (MKG), [\\*manoj\\_patel@csio.res.in](mailto:*manoj_patel@csio.res.in) (MKP)



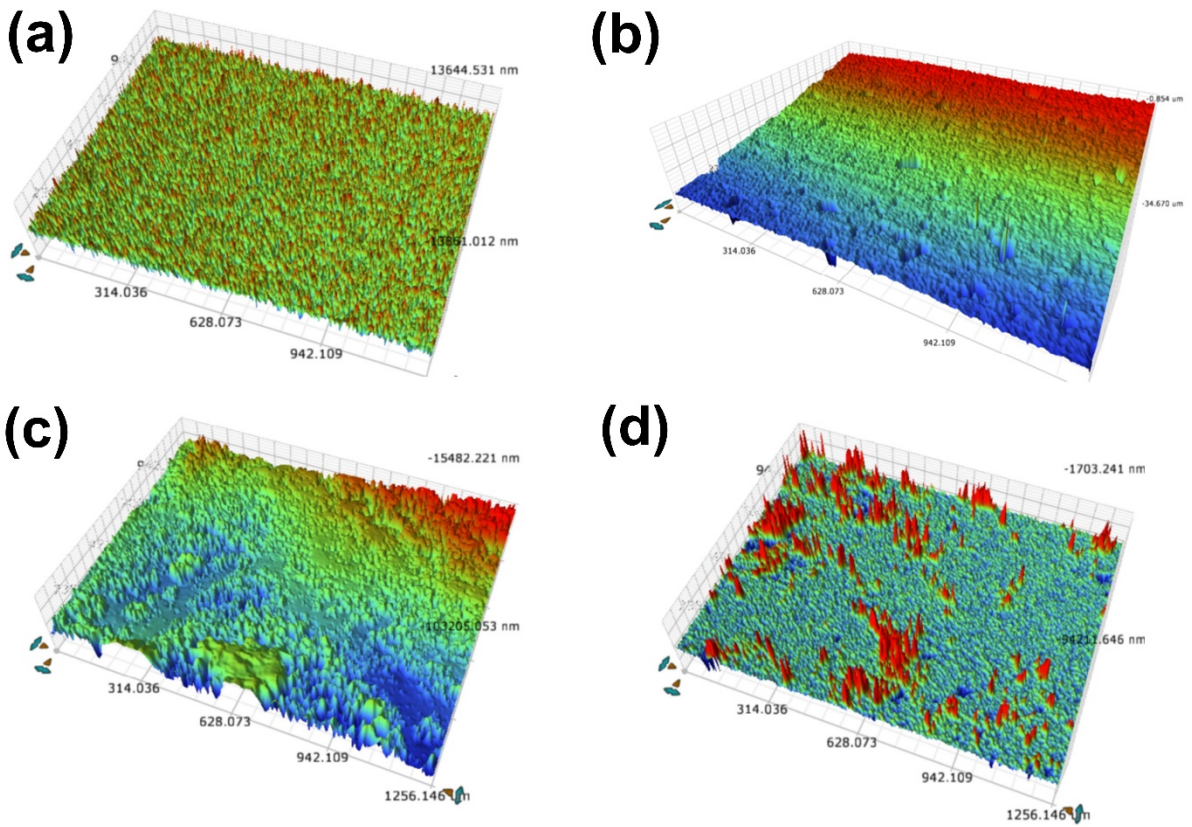
**Fig. S1** Experimental set-up for recording the output voltage and current signals using digital oscilloscope and electrometer.



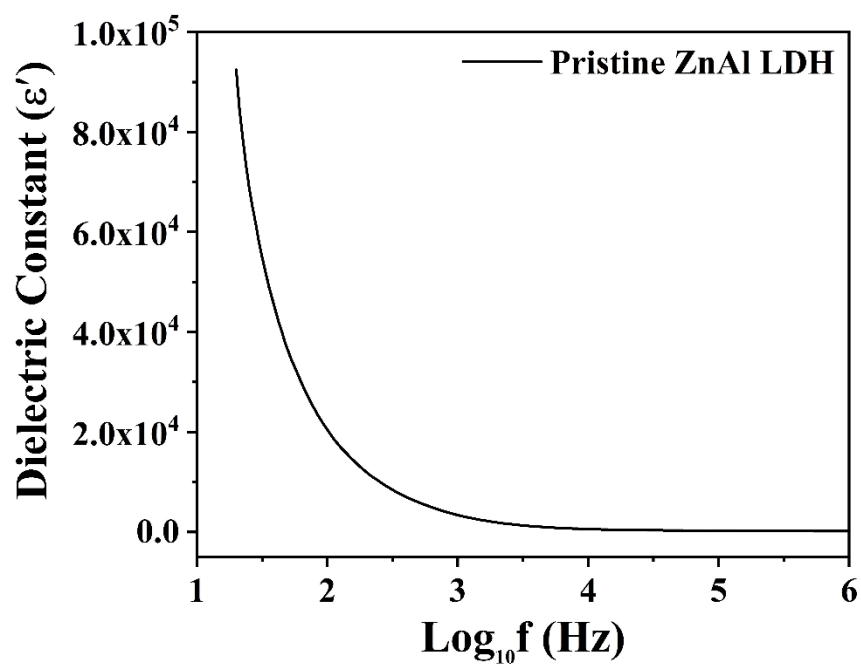
**Fig. S2** Output voltage of LDH-PVA nanocomposite based triboelectric nanogenerator with different concentrations of LDH nanosheets.



**Fig. S3** Output current density of LDH-PVA nanocomposite based triboelectric nanogenerator with different concentrations of LDH nanosheets.



**Fig. S4.** Surface roughness of the nanocomposite with (a) 1wt.% , (b) 3wt.%, (c) 5wt.% and (d) 10wt.% concentration of the LDH.



**Fig S5.** Variation of the dielectric constant with frequency for pristine ZnAL LDH nanosheets