

## Dendrimer-based triboelectric nanogenerators for renewable energy harvesting

\*Fengjiao Liu<sup>1</sup>, Herbert Behlow<sup>1</sup>, Sai Mallineni<sup>1</sup>, Ramakrishna Podila<sup>1,2</sup>, Sriparna Bhattacharya<sup>1</sup>, Apparao Rao<sup>1</sup>

<sup>1</sup>Graduate student, Clemson Nanomaterials Institute, Department of Physics & Astronomy, Clemson University;

<sup>1</sup>Research associate, Clemson Nanomaterials Institute, Clemson University;

<sup>1</sup>Graduate student, Clemson Nanomaterials Institute, Department of Physics & Astronomy, Clemson University;

<sup>2</sup>Assistant professor, Laboratory of Nano-biophysics & COMSET, Department of Physics & Astronomy, Clemson University;

<sup>1</sup>Research assistant professor, Clemson Nanomaterials Institute, Department of Physics & Astronomy, Clemson University;

<sup>1</sup>R. A. Bowen Professor, Clemson Nanomaterials Institute, Department of Physics & Astronomy, Clemson University

[fengjil@clemson.edu](mailto:fengjil@clemson.edu)

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**Abstract:** Triboelectric nanogenerators (TENGs) are promising for harvesting electricity from irregular or random mechanical energy (e.g., oceans waves, wind, walking). Polyamidoamine dendrimer is a functional polymer with a tree-like architecture containing highly electronegative moieties, which can be useful for increasing output of TENGs. Here, we present a vertical mode TENG using polyimide along with different generations of dendrimers coated on kitchen Al foils. The total output power of dendrimer TENGs was found to vary with degree of branching with a maximum power density  $\sim 495 \mu\text{W}\cdot\text{cm}^{-2}$ . The sensitivity of dendrimers electrical resistance to their surrounding environment was used to develop a self-powered dendrimer-TENG gas sensor.