

# Fabrication and Characterization of Ba doped ZnO using PVDF for Energy Harvesting

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**Abstract.**Recent advancements have been made in the field of energy harvesting over the past few years to meet the increasing desire for sustainable and renewable energies. This paper summarises the use of piezoelectricity for energy harvesting purposes produced by nanomaterials like Sodium Hydroxide(NaOH) and Zinc Chloride(ZnCl) . Here, ZnO powder was Ba doped(5%) to create a mixture. Barium is used as it enhances electrical properties, thereby creating a stronger material. The mixture was calcined in a muffle furnace. Material and structural analyses on fabricated nanofibers were performed using X-ray diffraction(XRD) to confirm preclined phases have occurred. After finally creating Ba doped ZnO, we use it to make a thin film .PolyVinyl di-flouride(PVDF) was used as a polymer. PVDF and its copolymers are the most promising materials for piezoelectric nanogenerators (PENGs) due to their unique electroactivity, high flexibility, good machinability, and long-term stability.The thin film created was able to produce voltage from different human motions such as tapping by fingers and bending. This will enable researchers to understand the piezoelectric mechanisms of the PVDF-based composite-film, so as to effectively convert mechanical energy into electrical energy, and therefore use it for energy harvesting.

## References:

- <https://www.mdpi.com/journal/nanomaterials>
- <https://www.hindawi.com/journals/jnm/>
- Some old research papers related to nanomaterials.