A study on the piezoelectric properties as concentration of PVDF known as piezoelectric polymer

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Much research has been studied on piezoelectric nanogenerator and energy harvesting capable of producing electrical energy by physical deformation. PVDF, known as representative piezoelectric polymer, has been used as piezoelectric materials because of its excellent flexibility and durability. The difference of electronegativity between H and F is formed a local electric field in the PVDF molecule. When an external force is applied to the piezoelectric element of the PVDF forming the all trans chain β-phase crystal structure, forms a maximum relative potential difference due to the change in the localized electro density and local electric field changes. To improve the output voltage of PVDF piezoelectric nanogenorator, It is important to maximize local electric field in PVDF molecules by forming a beta phase crystal structure. In the study, we prepared PVDF nanoweb with various concentration of PVDF solution. To increase the β-phase content polarization was immediately performed after electrospinning. The optimum electric field for the formation of β-phase was established. The effect of solvent evaporation and charging on piezoelectric properties were studied.