In article number 2207393, Jun Chen, Weiqing Yang, Weili Deng and co-workers, developed topological designs to enhance the electromechanical response, for the electrospun piezoelectric membranes, which show a 300% increase in electric output and a 478% increase in frequency response range compared with traditional electrospun membranes. It represents a milestone in designing electrospun membranes for electromechanical conversion and high-performance soft bioelectronics.