Learning from nature for better sensing

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We will focus on recent developments on designing, fabrication, and characterization of nanostructured polymeric materials responsive to external stimuli (temperature, air pressure, and fluidic flow).

First, we will summarize our recent progress on free standing flexible nanocomposite structures fabricated with spin-assisted layer-by-layer (LbL) assembly. Then, we will discuss our recent bioinspired design of hydrogel cupula structures for efficient haircell for detection of a minute microscopic flow. In this design, we exploited photopatterned polymerization of functionalized macromonomers to cap haircell sensors in order to mimic biological neuromasts of a gold fish and achieve high sensitivity to flow.