Comparative Analysis of Piezoelectric Windstalk Designs

Fadely, Eleanor

This research examines the energy-generating capacity of a novel piezoelectric windstalk. Wind energy is an up-and-coming source for electricity within the United States, and current wind turbines are used on an industrial scale. However, wind turbines present certain problems, including human and animal health risks. A recent idea, conceptualized by the Atelier DNA design firm, proposes “windstalks” -- energy-harvesting rods that sway in the wind. This research adapts the Atelier DNA design, using piezoelectric disks arranged in a column on a flexible acrylic rod. Data collected from bending individual piezo disks on the stalk indicates that small amounts of voltage are being detected; power calculations show that an individual disk will produce 0-40 microwatts when bent. Ideally, piezoelectric windstalks have the potential to be scaled to larger sizes: on a large scale, windstalks could replace wind turbines and still generate comparable energy.

Awards Won: