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**Electrospinning water harvesters inspired by spider silk and beetle**

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**Abstract:**

Fabricating a water harvester that exhibits desirable performance is an essential task to solve the fresh water scarcity issue. In this manuscript, we introduced a bio-inspired concept for a novel bead-on-string nanofiber with hydrophobicity/hydrophilicity simultaneously by electrospinning technique, that can be used as a high-performance water harvester. Scanning electron microscopy (SEM) and water contact angle measurement showed the bio-inspired structures of novel water harvesters and a custom-made setup was used to evaluate its water harvesting ability. The water harvesting efficiency of our membrane was determined to be 744 mg/cm<sup>2</sup>/h, which was 91% higher than the virgin PAN membrane. The durability was also tested and reported.

**Keywords:** Water harvester; Electrospinning; Bio-inspired; Spider silk; Beetle

**Introduction**

Recently, artificial water harvesters have attracted much attention as a method to solve the growing global fresh water scarcity caused by desertification, climate change and global warming. Various materials were developed to achieve the best water harvesting performance as well as the simplest fabrication process.

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