

Abstract Submitted  
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**Superhydrophilic-superhydrophobic water harvester inspired by the wetting property of cactus stem**<sup>1</sup> NAMI HA, HYEJEONG KIM, SANG JOON LEE, Pohang University of Science and Technology, BIOFLUID AND BIOMIMIC RESEARCH CENTER TEAM — Cacti can survive in extremely dry environment thanks to their unique water collecting ability. In addition to the spine which is one of the water collection systems, cactus stem actually plays an important role for harvesting and storing the absorbed water. In this study, the wetting property of cactus stem inspired us to develop a novel water harvester with a superhydrophobic-superhydrophilic double structure. Since the cactus stem is comprised of superhydrophobic cuticular surface and superhydrophilic mucilage cells, it can effectively absorb water and reduce evaporation of the absorbed water. In addition, mucilage cells can release the absorbed water to photosynthetic cells under drought stress. Moreover, a mature stem has microcracks on its surface, which enable for water to be rapidly absorbed into the mucilage cells. Inspired by these characteristics of cactus stem, the biomimetic water harvester has two distinct functions; effective water-absorption with directional water transport and on-demand water-releasing function. The developed water harvester would be utilized for developing an effective 3D plant-inspired water collector.

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