

Abstract Submitted  
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**Biophysical analysis of water filtration phenomenon in the roots of halophytes**<sup>1</sup> KIWOONG KIM, SANG JOON LEE, Center for Biofluid and Biomimic Research, Department of Mechanical Engineering, Pohang University of Science and Technology (POSTECH) — The water management systems of plants, such as water collection and water filtration have been optimized through a long history. In this point of view, new bio-inspired technologies can be developed by mimicking the nature's strategies for the survival of the fittest. In this study, the biophysical characteristics of water filtration process in the roots of halophytes are experimentally investigated in the plant hydrodynamic point of view. To understand the functional features of the halophytes 3D morphological structure of their roots are analyzed using advanced bioimaging techniques. The surface properties of the roots of halophytes are also examined Based on the quantitatively analyzed information, water filtration phenomenon in the roots is examined. Sodium treated mangroves are soaked in sodium acting fluorescent dye solution to trace sodium ions in the roots. In addition, *in vitro* experiment is carried out by using the roots. As a result, the outermost layer of the roots filters out continuously most of sodium ions. This study on developing halophytes would be helpful for understanding the water filtration mechanism of the roots of halophytes and developing a new bio inspired desalination system.

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