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Scientific designs of pine seeds and pine cones for species conservation[1] KAHYE SONG, EUNSEOP YEOM, HYEJEONG KIM, SANG JOON LEE, Pohang Univ of Sci & Tech — Reproduction and propagation of species are the most important missions of every living organism. For effective species propagation, pine cones fold their scales under wet condition to prevent seeds from short-distance dispersal. They open and release their embedded seeds on dry and windy days. In this study, the micro-/macro-scale structural characteristics of pine cones and pine seeds are studied using various imaging modalities. Since the scales of pine cones consist of dead cells, the folding motion is deeply related to structural changes. The scales of pine cones consist of three layers. Among them, bract scales are only involved in collecting water. This makes pine cones reduce the amount of water and minimize the time spent on structural changes. These systems also involve in drying and recovery of pine cones. In addition, pine cones and pine seeds have advantageous structures for long-distance dispersal and response to natural disaster. Owing to these structural features, pine seeds can be released safely and efficiently, and these types of structural advantages could be mimicked for practical applications.

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