

Superior Adhesive Property of Sericin Derived from *Saturnia japonica*

이진훈, 이정준, 김형빈<sup>1</sup>, 임찬웅, 황동수<sup>1</sup>, 이동욱<sup>†</sup>

UNIST; <sup>1</sup>POSTECH

(dongwoog.lee@unist.ac.kr<sup>†</sup>)

Sericin, the glue protein, is a hardening component of *Bombyx mori* (BM) silkworm cocoon and a bio-waste from the degumming process. However, recent studies have revealed that the sericin can be applied in pharmaceuticals, cosmetics, and food industry, since it possesses useful properties such as anti-aging, wound healing, etc. Unlike the cocoon of BM, the cocoon of *Saturnia japonica* (SJ) has tanned color due to the oxidation of sericin, macroporous structure, and outstanding mechanical strength. In this study, we extracted sericin from SJ cocoon and measured the interaction forces between sericin nanofilms using a surface forces apparatus (SFA) in aqueous solution with various pH. The measured interaction energy between the SJ sericin was up to 150% higher than that of BM sericin with gradual increases regarding the higher pH and contact time. The pH dependent cohesive force indicates a possibility of the increase in number of binding sites due to the sericin rearrangement and/or conformation change. These comprehensive results support an outstanding adhesive property of SJ sericin, and suggest it could be used for eco-friendly bio-materials or adhesive binders.