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## Effect of Au deposition on virus-based colorimetric films

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We report on the effect of Au nanoparticle deposition on the colors of virus-based colorimetric sensors consisted of self-assembled M13 bacteriophage films decorated by Au nanoparticles. We observed the effect of the localized surface plasmons in the Au nanoparticles onto the virus-based self-assembled films. Recently, virus-based colorimetric sensors have demonstrated real-time detection of biochemicals with high sensitivity, and portability (Nature Communications, 5, 3043 (2014)). Therefore, it is desirable if we can obtain colored virus films in a reliable way. However, the M13 bacteriophage-based films show some variance in their colors after assembly. This can be a problem in the mass production process of virus-based colorimetric sensors for commercial use. In this study, we fabricated a biomimetic material-based colorimetric film using M13 bacteriophage, a filamentous virus that infects only bacteria, as the building block. Then, we deposited Au nanoparticles over the colorimetric film. We observed the effect of Au nanoparticle deposition on the color and morphology of the virus films by using optical and atomic force microscopy (AFM). From these studies, we provide a method for structural color enhancement of biomimetic material-based colorimetric films.

### Biography

Minjun Park received his Bachelor's degree in Mechanical Engineering at Wonkwang University, Korea. Currently, he is a graduate student in the School of Mechanical Engineering at Korea University. His main research field is in the development of self-assembled structures using nanoscale biomimetic materials and in the measurement of the electromechanical properties of biomaterials using scanning probe microscopy techniques.

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