Statistical Analysis of 'Liquid Layer Popping Effect' and Its Application

Moon, Junseok

Bong, Hae Kyun

In rainy days, we can see a lot of liquid layers formed in the lattice of window screen. We hypothesized that the speed of layer popping is related to the properties of liquid. First, we observed geometrical patterns by shooting laser beam into the layer, and noticed the process of ‘Liquid Layer Popping Effect’. Second, for statistical analysis, we developed smartphone APP and collected elapsed time until popping for each layers. By compiling statistics, we calculated the speed of popping and analyzed liquid properties. Also applying kitchen goods such as detergent, we succeeded measuring PPM-concentration with accuracy of R2=0.9915. Moreover, we expanded the principle of this effect into 3D lattice, made it possible for measuring molar-concentration without smartphone APP. As a result, it was possible to measure PPM-concentration without expensive industrial equipments, and molar-concentration more convenient than prism-method, or polarized film. Window screen showed its possibility for being the most accurate, convenient measuring method.

Awards Won: