MERIT Corporate Internship Report

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Host Company: BASF Advanced Chemicals Co. Ltd. (Shanghai, China)

Abstract:

I participated in the internship of BASF Advanced Chemicals Co. Ltd. (Pudong Site, Shanghai, China), which is headquarter of Asia and Pacific area, for two months. BASF is a largest chemical company in the world and manages all the chemicals from the upstream like oil and gas to the downstream. In this internship, I joined Home Care and Industrial & Institutional Cleaning, Department of Care Chemicals in BASF. Toward a novel liquid laundry detergent, I performed the research about fundamental understanding of stability for multi component systems.

Research Activities:

Recently, the field of laundry detergent has been developing quickly in Japan and not only good detergency but also additional functions like antibacterial effect, bleaching or softener is required. Furthermore, the shape of detergent has also changed from powder type to liquid type, and nowadays a new “single dose” type of detergent shows up.

In order to develop these kinds of new detergent, the most fundamental and important thing is the stability of detergent. All detergents contain surfactants that play very important role for cleaning. However, in general, the systems containing surfactants easily cause phase transition or phase separation because of the concentration of each surfactants or environment of the system like temperature, salt concentration or other ingredients. Therefore, in the development of a new detergent, it is very important to know the phase

behavior of the system in response to each factor.

In this internship, I investigated the phase behavior of senary (six) ingredients system in response to concentration of each ingredient. First, I made the 144 samples, where the concentration of each ingredient is slightly different, and identified the phase and measured the properties in each samples. Then, in order to the effect of each ingredient on the phase behavior, I discussed with the specialist of theoretical calculation in BASF (Ludwigshafen, Germany) and finally succeeded in establishing the theoretical explanation of the phase behavior in the system. This knowledge will be helpful for the future development of new liquid detergent.

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