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## Green assay of anionic surfactant via ion-association with methylene blue sorbed on polyurethane foam monolithic rod and using a smartphone

Chonnipa Yeerum<sup>a</sup>, Wasin Wongwilai<sup>b</sup>, Kate Grudpan<sup>b</sup> and Monnapat Vongboot<sup>a,\*</sup>

<sup>a</sup>Department of Chemistry, Faculty of Sciences, King Mongkut's University of Technology Thonburi, Bangkok, 10140, Thailand

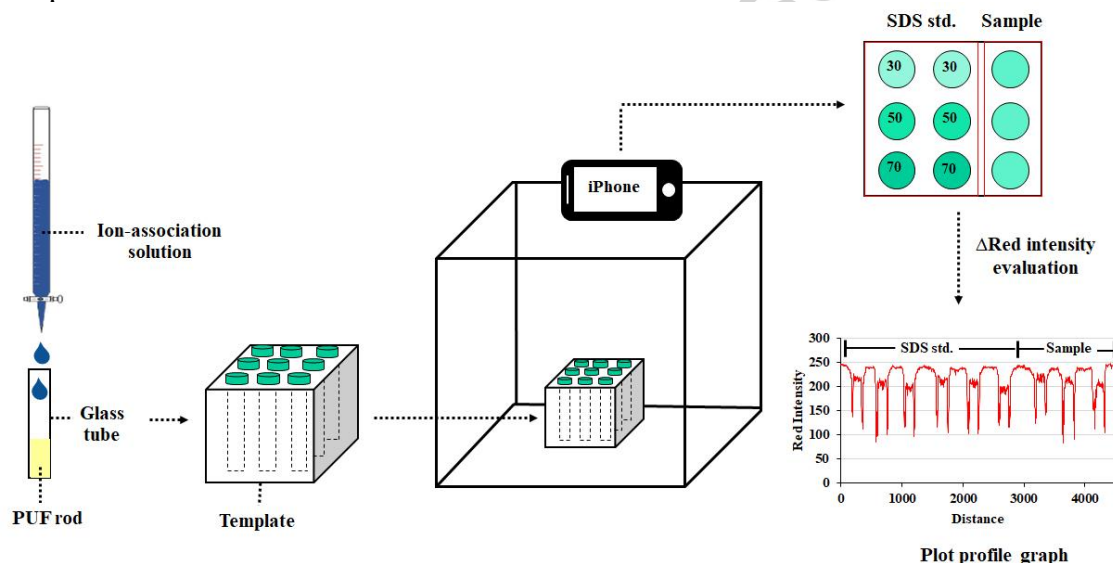
<sup>b</sup>Center of Excellence for Innovation in Analytical Science and Technology and Department of Chemistry, Faculty of Sciences and Science and Technology Research Institute, Chiang Mai University, Chiang Mai, 50200, Thailand

\* Corresponding Author E-mail: sumalee.tan@kmutt.ac.th

### Abstract

Anionic surfactant as sodium dodecyl sulfate (SDS) can be assayed by using methylene blue (MB). The ion-association of SDS-MB can be extracted solventless but sorbed on a specified polyurethane foam (PUF) monolithic rod, prepared in the lab by mixing polyether with methylene diphenyl diisocyanate (MDI). The blue product (the ion-association of SDS-MB) on the rod can be followed by a smartphone (iPhone 6S). With a set of conditions, a single standard calibration can be applied. The proposed green analytical procedure can be employed for on-site assay. Application to real water samples was demonstrated.

### Graphical abstract



**Keywords:** Green assay; anionic surfactant; methylene blue; polyurethane foam; monolithic rod; smartphone

### 1. Introduction

Anionic surfactants are extensively used, for instance, the detergent industry, household, pharmaceutical industry and biotechnology. Unfortunately, it can significantly damage the aquatic life and pollute to natural water from its discharging [1]. The Environmental Protection Agency-United States (U.S. EPA) established the maximum tolerance limit at  $0.5 \mu\text{g mL}^{-1}$  for anionic surfactant in water [2].

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