



## **Composition of surfactants in the sea-surface microlayer and atmospheric aerosols around coastal areas of the Peninsular Malaysia**

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Surfactants are seen as potentially important in environmental chemistry because of their ability to alter the movement of materials across aqueous interfaces and to affect the solubility of compounds in aqueous systems. In atmospheric chemistry, the composition of the organic surfactant which typically covers the surface of atmospheric particles is expected to affect all of the surface related aerosol properties. This study aimed to determine the concentrations of surfactants on the sea-surface microlayer and in atmospheric aerosols in several coastal areas around the Peninsular Malaysia. The concentrations of anionic and cationic surfactants from the sea-surface microlayer (collected using rotation drum) and from aerosols (collected using High Volume Sampler, HVS) were analysed as Methylene Blue Active Substances (MBAS) and Disulphine Blue Active Substances (DBAS) respectively through the colorimetric method using an Ultra Violet (UV) visible spectrophotometer. The results of this study showed that the average concentrations of surfactants in the sea-surface microlayer around the coastal area in Peninsular Malaysia ranged between undetected and  $0.36 \pm 0.12 \mu\text{molL}^{-1}$  for MBAS, and between  $0.10 \pm 0.01$  and  $0.33 \pm 0.02 \mu\text{molL}^{-1}$  for DBAS. The concentration of surfactants in atmospheric aerosols ranged between  $38.38 \pm 7.25$  and  $137.13 \pm 34.91 \text{ pmolm}^{-3}$  for MBAS, and between  $27.82 \pm 3.32$  and  $104.21 \pm 18.02 \text{ pmolm}^{-3}$  for DBAS. Both surfactants in surfactants sea-surface microlayer and atmospheric aerosols were influenced by anthropogenic sources. The contribution of surfactants from the sea-surface microlayer to the composition of surfactants in atmospheric aerosols appears to be very minimal and more dominant in fine mode aerosols.