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Structure of hybrid nanoplate composed of amphiphilic polyhedral oligomeric silsesquioxane

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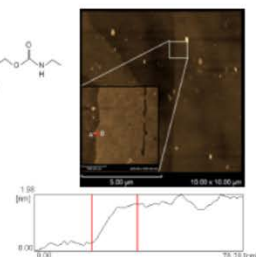
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Polyhedral oligomeric silsesquioxane (POSS) is a unique hybrid compounds, these cubic structure with ~ 1 nm size is attractable for a building block to create highly ordered nanomaterials. Recently, we synthesized hybrid amphiphile composed of hydrophobic double-decker -shaped polyhedral silsesquioxane (DDSQ) with hydrophilic organic chains (2DEGNH-DDSQ) (Fig.1). Moreover we found that 2DEGNH-DDSQ formed a microrod at an air-water interface. In this paper, we reported that the microrod can be changed to nanosheet by compression the monolayer at constant pressure for a long time.



Fig.1 Structure of 2DEGNH-DDSQ.

Self-organization of the hybrid amphiphile was performed at an air-water interface. The 2DEGNH-DDSQ was spread onto an air-water interface and compressed at 7 mN/m for 10 hours. The monolayer was transferred onto a solid substrate using the Langmuir-Schaefer method and the morphology was observed by AFM. The AFM image of the monolayer transferred onto a silicon substrate showed a large two-dimensional (> 50 μm²) plate with a monolayer thickness (Fig.2). Details of the structure such as presence and absence of hydrogen bond in the nanoplate will be further discussed.



Distance [nm]	Height [nm]	Degree [°]
17.09	1.35	4.53

Fig.2 AFM image of 1 layer of 2DEGNH-DDSQ film transferred onto a solid substrate. Inset, expanded image of the selected area.

発表者様ならびに参加者の皆様、関係者の皆様にご迷惑をおかけしましたことを深くお詫び申し上げます。

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