

かご型シルセスキオキサンを基盤とした非従来型発光体の開発

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Development of Nonconventional Luminogen Based on Polyhedral Oligomeric Silsesquioxane

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In recent years, nonconventional chromophores, which exhibit luminescence without aromatic rings or large π -conjugated systems have attracted great attention.¹⁾ It is considered that the luminescence is attributed to the interaction between functional groups such as amines and carbonyl groups, and many nonconventional chromophores based on polymers and dendrimers have been reported.²⁾ POSS is a rigid cubic molecule composed of Si–O bonds possessing organic side-chains on each vertex. The structure is similar to dendrimer and can be expected efficient interactions between the side-chains.³⁾ In this research, we aimed to produce nonconventional chromophores by introducing functional groups to the side-chains of POSS. The eight urea groups-modified POSS (**UPOSS**) was synthesized according to Scheme 1. From the optical measurement of **UPOSS** in the solid state, blue luminescence was observed (Figure 1).

Keywords : POSS; luminescence; nonconventional luminogen; urea

近年、芳香環や長い π 共役を有さない非従来型発光体が注目されている¹⁾。発光特性はアミンやカルボニルなどの官能基間の相互作用由来と考えられ、ポリマーや dendrimer での報告が多い²⁾。一方 POSS は Si–O 結合を骨格とした立方体構造の各頂点に有機側鎖を有し、dendrimer に類似した構造で側鎖間の高効率な相互作用が期待できる³⁾。本研究では POSS に種々の官能基を導入し、発光特性の発現を狙った。

Scheme 1 に従って各側鎖にウレア基を導入した POSS (**UPOSS**) を合成した。固体状態における光学測定を行ったところ、青色の発光が確認された (Figure 1)。

Scheme 1. Synthesis of UPOSS

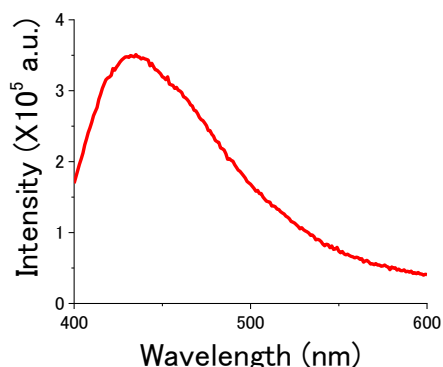
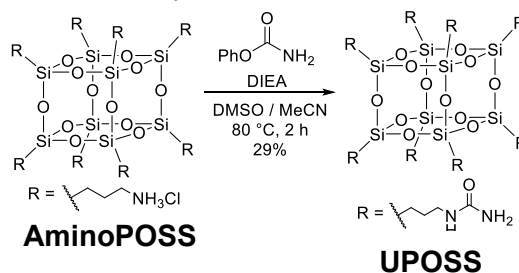


Figure 1. PL spectrum of **UPOSS** in the solid state excited at 380 nm.

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