Photochromic Organogel Formed by Molecular Association of Tris(phenylisoxazolyl)benzene and Bis(pyridylethynyl)benzene <u>•Yuko Hirai</u>, Toshiaki Ikeda, Takeharu Haino

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Supramolecular gels formed by low-molecular-weight gelaters have attracted a considerable interest. Most of supramolecular gels are composed of supramolecular fibrillar assemblies, held together by noncovalent interactions.

A tris(phenylisoxazolyl)benzene assembles to form the fibers by π - π stacking and dipole-dipole interactions to produce gels.^{1,3,4} In this presentation, I will report a new photochromic organogelater resulted from the assembly of tris(phenylisoxazolyl)benzene **1** and bispyridine derivative **2** (Fig.1). **2** created the



Figure 1. Tris(phenylisoxazolyl)benzene derivative 1 and Bis(pyridylethynyl)benzene derivative 2.

interfiber hydrogen bonds with the phenolic hydroxyl groups, connecting the supramolecular fibrillar assembly of **1**. The three-dimentional networks were developed to form the organogels in aniline and benzyl alcohol.

The π - π stacking interaction of **1** in solution was studied using ¹H NMR spectoscopy. Aniline and benzyl alcohol were gelled in the presence of **1** and **2** (Fig.2a). The SEM and AFM images suggested that the cooperative assembly of **1** and **2** play a key role in the network formation (Fig.2b, c).



Figure 2. (a) Gel of a mixture of **1** and **2** in benzyl alcohol. (b) SEM image of the benzyl alcohol xerogel prepared from a mixture of **1** and **2**. (c) AFM topographic image of a cast film prepared from a solution of **1** and **2** in benzyl alcohol on mica $(2.5 \times 2.5 \ \mu\text{m}^2)$.

The tris(phenylisoxazolyl)benzene possesses three azobenzene moieties. Irradiation of UV light isomerizes the *trans* to *cis* form of the azobenzene units.² The *trans* isomer formed the gel, whereas it was disrupted when the *trans* isomer was converted to the *cis* form.

[Reference]

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