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Synthesis, Liquid Crystalline Properties and Gelation Ability of Organogels Formed by Tricyclic Diesters Compounds with Coumarin Skeleton

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In our previous work, it has been found that some thermotropic liquid crystal compounds with coumarin skeleton at a terminal position can form physical gel with several organic solvents. However, correlation between molecular structures and gelation properties is not elucidated.

In this work, tricyclic diesters compounds with coumarin skeleton with different lengths of the terminal alkyl chain (Figure 1, Compounds **1**-n) were synthesized and their mesomorphic properties and gelation ability were evaluated.

Figure 2 shows the images of compound **1**-6 in a bulk state under polarized microscopy. It formed a Schlieren texture at 241 ℃ on a cooling process, so it can assign to be a nematic (N) phase. On the other hand, compound **1**-12 formed a fan texture at 227 ℃ on a cooling process, so it can assign to be a smectic A (SmA) phase. Figure 3 shows $T_{gel\text{-}sol}$ of propylene carbonate (PC) gels. The $T_{gel\text{-}sol}$ increased with the elongation of the terminal alkyl chain. It is thought that large hydrophobic interaction improves thermal stability of the gel.

In this presentation, effects of elongation of the terminal alkyl chain on liquid crystalline properties and gelation ability will be reported.

1) Y. Endo, *et al.*, *Chem. Lett.* **2024**, *52*, 337.

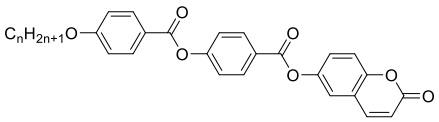

Figure 1. Chemical structures of compounds **1**-n (n = 6, 8, 10, 12)

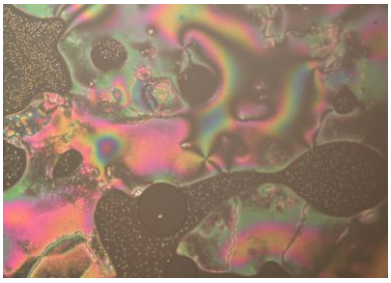

Figure 2. A POM image of compound **1**-6 at 241℃.

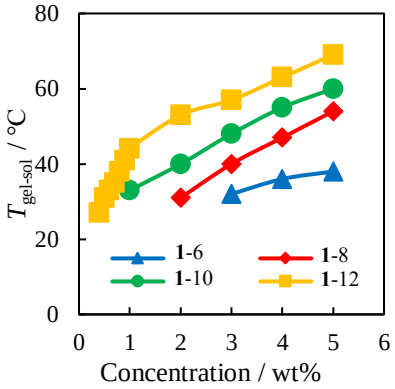

Figure 3. Gel-sol transition temperatures of PC gels.