

## Liquid Crystalline Properties and Gelation Ability of 4-Alkoxycinnamate with a Fluoroalkyl Group

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In our previous works<sup>1</sup>, it was found that some low molecular weight compounds having fluoroalkyl groups can gelate various organic solvents. However, the effect of molecular structures on liquid crystalline and gelation properties is not elucidated.

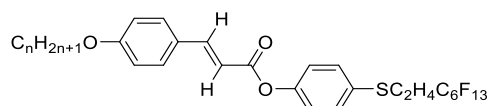
In this work, 4-alkoxycinnamate with a fluoroalkyl group were synthesized and their liquid crystalline properties and gelation properties were evaluated.

Figure 2 shows an image of compound **1-8** in a bulk state under polarized microscopy. It formed a typical focal conic fan texture at 110 °C on a cooling process, so the liquid crystal phase can assign to be a smectic A phase.

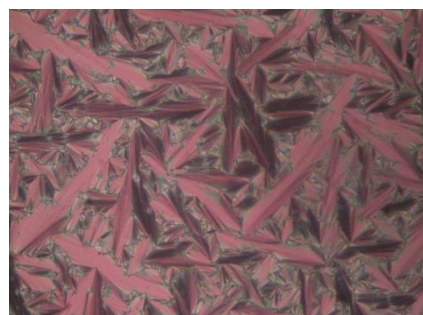
Critical gel concentrations of compounds **1-n**, which is the results of gelation tests, are shown in Table 1. When its value is smaller, it can be said that it behaves better gelator since it can gelate the solvents with smaller addition. Compounds **1-10** were able to gelate some polar solvents such as ethanol, acetonitrile, and propylene carbonate at additions of 5% or less whereas compounds **1-8** and **1-9** did not form gels. It is suggested that the gelation with compounds **1-n** may need a large hydrophobic interaction.

In this presentation, the effect of elongation of the terminal alkyl chain of compounds **1-n** on the liquid crystalline properties and thermodynamic behavior of gelation in organic solvents will be reported.

1) T. Yoshida *et al*, *Mol. Cryst. Liq. Cryst.* **2017**, 647, 299.



**Figure 1.** Chemical structures of compounds **1-n** (n=8, 9, 10).



**Figure 2.** A image of compound **1-8** at 110 °C under polarized microscopy.

**Table 1.** Critical gel concentration in each solvent.

Solvent	Concentration(wt%)		
	1-8	1-9	1-10
PC	P(5.0)	S(5.0)	G(5.0)
GBL	P(5.0)	S(5.0)	G(5.0)
Acetonitrile	P(5.0)	S(5.0)	G(4.0)
DMSO	P(5.0)	S(5.0)	G(4.0)
Ethanol	P(5.0)	S(5.0)	G(3.0)
1-Octanol	P(5.0)	S(5.0)	G(2.0)
Toluene	S(5.0)	P(5.0)	S(5.0)
n-Octane	P(5.0)	P(5.0)	P(5.0)

G, S and P are gel, sol, precipitate states respectively.