

Gel Properties Formed by Dimer Type 4-Mercaptobenzoic acid Derivatives Having Perfluoroalkyl Group at Both Terminal Position

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Keywords: Perfluoroalkyl group; Low molecular weight organic gelator; ionic liquid gel; synthesis

In our laboratory, it was found that low molecular weight compounds having a perfluoroalkyl group formed fibrous aggregates and gelate several organic solvents. However, the correlation between molecular structures of gelators and gelation ability has not been clarified.

In this work, dimeric 4-mercaptobenzoic acid derivatives (Fig. 1) were synthesized and evaluation gelation abilities.

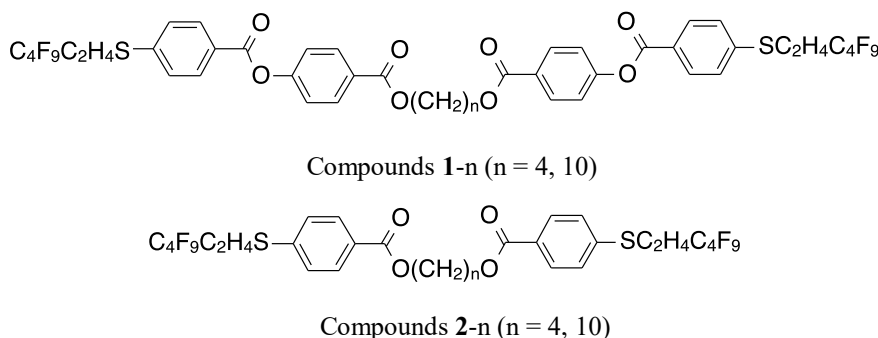


Fig. 1 Chemical structures of compounds **1-n** and **2-n**

In Table 1, compounds **1-10** and **2-4** were able to gelate propylene carbonate (PC). On the other hands, compounds **1-4** and **2-10** were unable to gelate PC, acetonitrile, and dimethyl sulfoxide (DMSO).

Compounds **1-10** was able to gelate 1-Butyl-3-methylimidazolium bis (trifluoromethanesulfonyl) amide ([BMIM][TFSA]). The sol-gel transition temperatures of 5wt% PC gels formed by compound **1-10** and **2-4** were 46°C and 40°C, respectively.

In this presentation, critical gel concentration evaluated by ionic liquids will be reported. In addition, thermal properties of gels formed by compounds **1-n** and **2-n** will be discussed.

Table 1 Critical gel concentration in each solvent

Solvents	Compounds (Concentration, wt%)			
	1-4	1-10	2-4	2-10
Acetonitrile	S (5.0)	S (5.0)	S (5.0)	S (5.0)
DMSO	S (5.0)	S (5.0)	G (2.0)	S (5.0)
PC	S (5.0)	G (2.0)	G (4.0)	S (5.0)

* S = Sol, G = Gel, () = wt%, PC = Propylene carbonate, DMSO = Dimethyl sulfoxide