Supplementary materials for the article

The influence of the molecular structure of compounds on their properties and the occurrence of chiral smectic phases

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MASS SPECTRA OF MESOGENS

The purity of the liquid crystalline esters was recorded using a Shimadzu prominence chromatograph. The strong molecular ion with a captured sodium atom $[M + Na]^+$ was observed; see Figures S1 and S2.

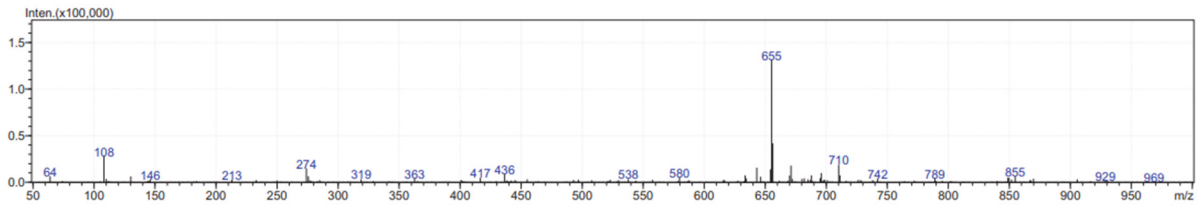


Figure **S1.** Mass spectrum of the compound 3PhPhCH$_2$O.

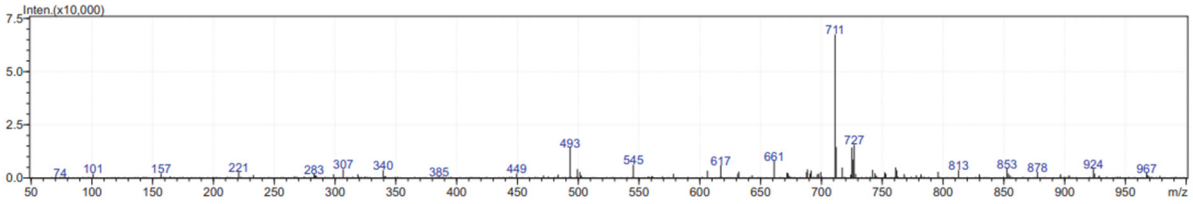


Figure S2. Mass spectrum of the compound 7PhPhCH$_2$O.

STRUCTURE CONFIRMATION OF MESOGENS

A comparison of NMR spectra confirmed the compliance of real structures with the planned structures; see Figures S3-S6.

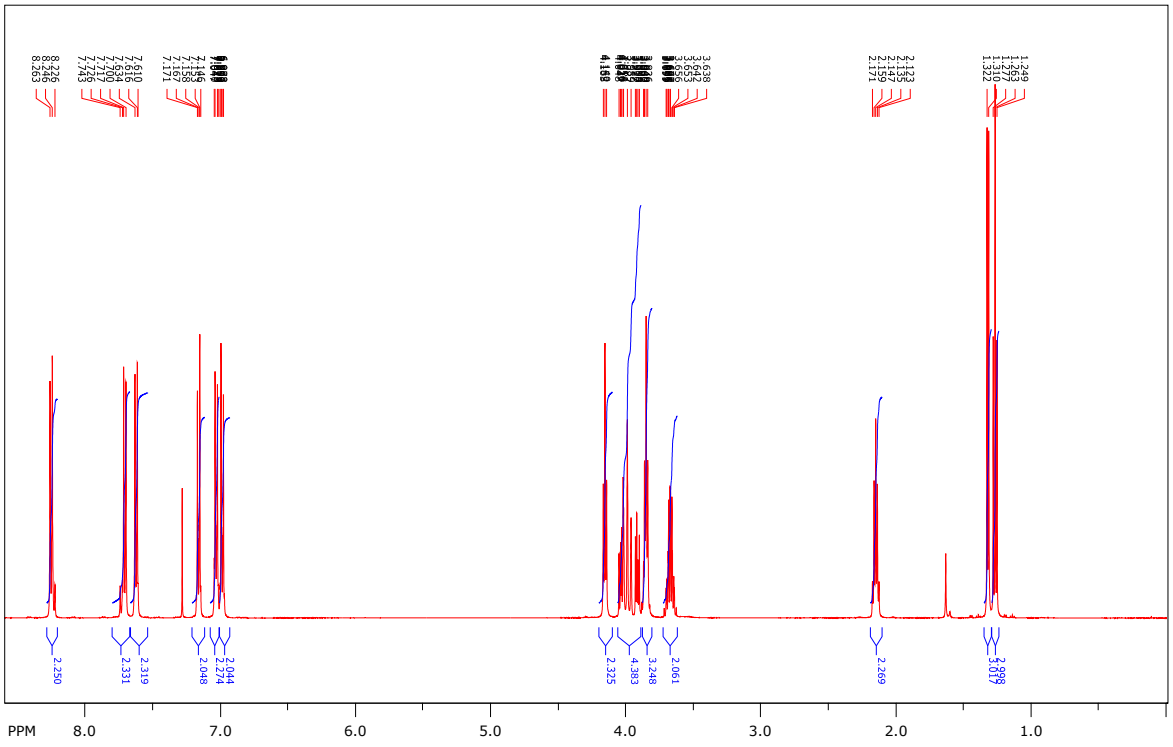


Figure S3. ^{1}H NMR spectrum of the compound 3PhPhCH$_2$O in CDCl$_3$.

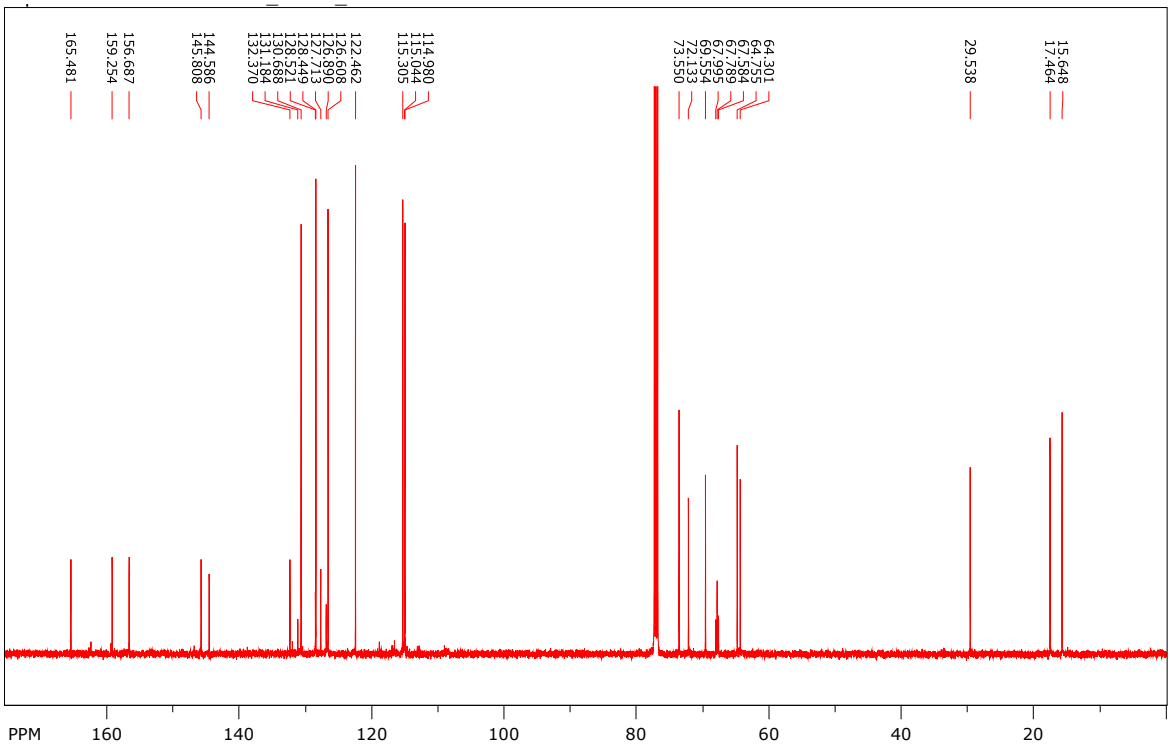


Figure S4. ^{13}C NMR spectrum of the compound 3PhPhCH$_2$O in CDCl$_3$.

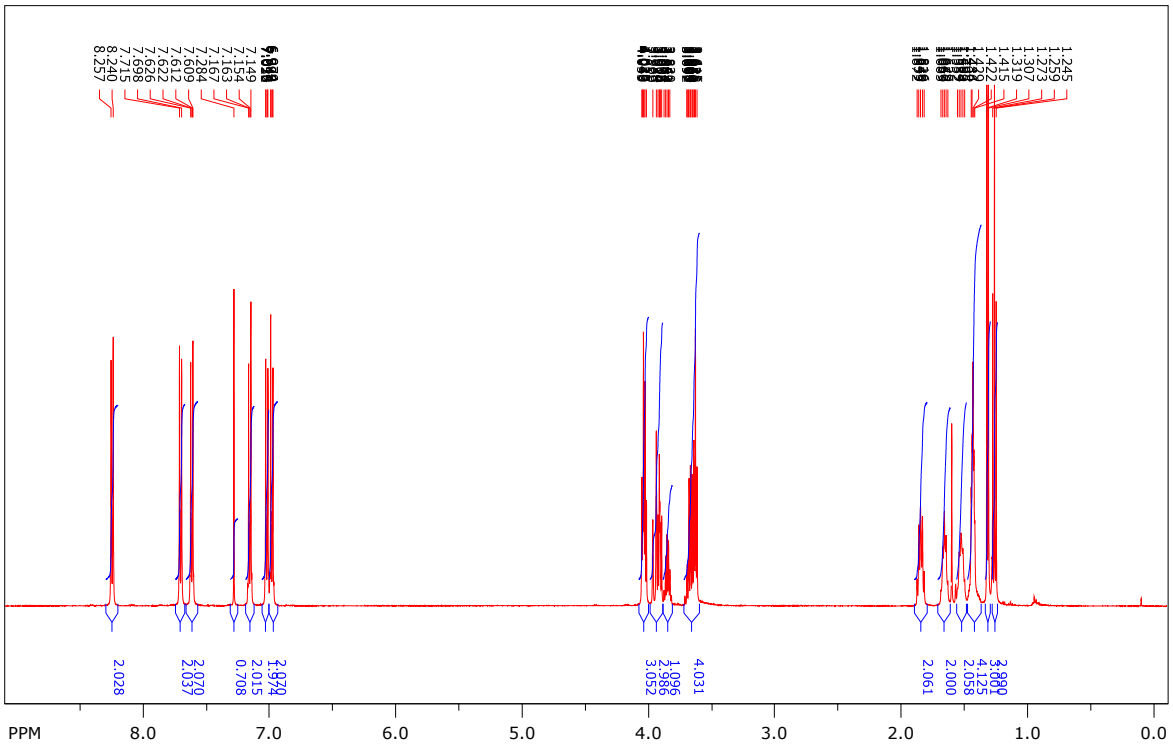


Figure S5. ^{1}H NMR spectrum of the compound 7PhPhCH$_2$O in CDCl$_3$.

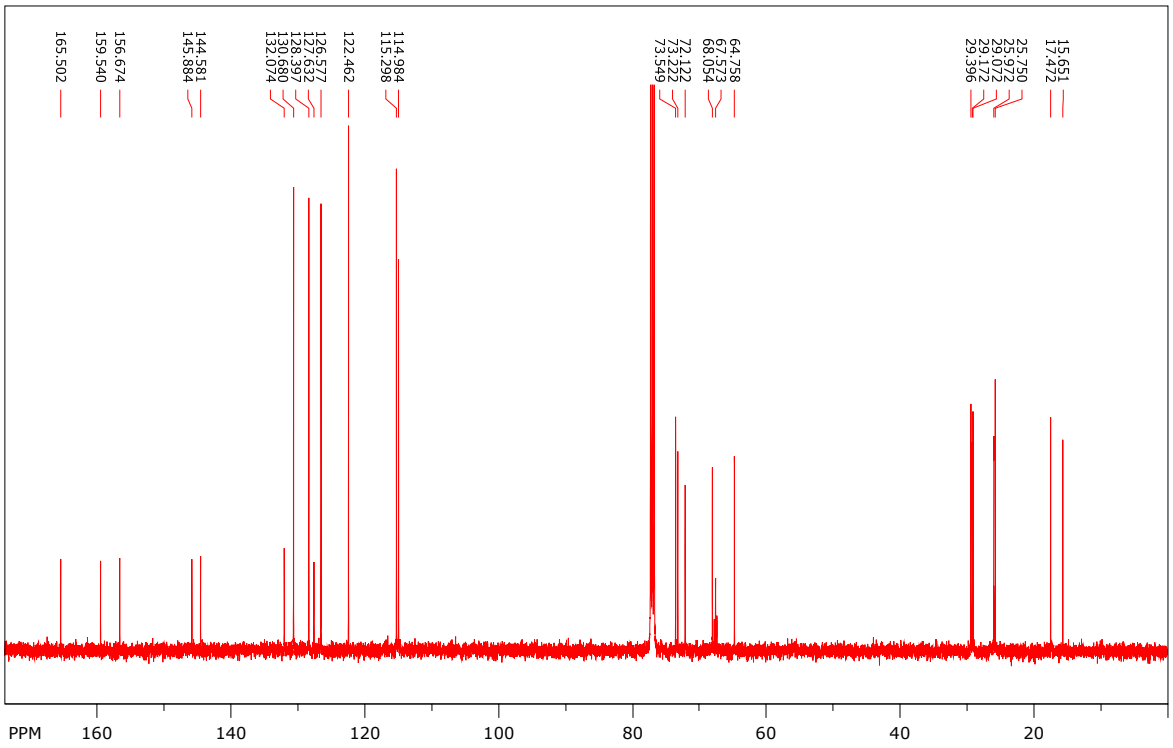
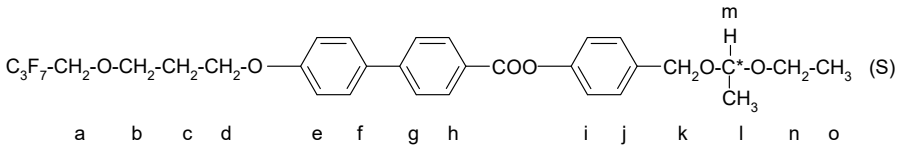


Figure S6. ^{13}C NMR spectrum of the compound 7PhPhCH$_2$O in CDCl$_3$.

The chemical shift values for obtained mesogens are given in Tables S1 and S2. Protons are marked as shown below:

A. 3PhPhCH$_2$O



B. 7PhPhCH$_2$O

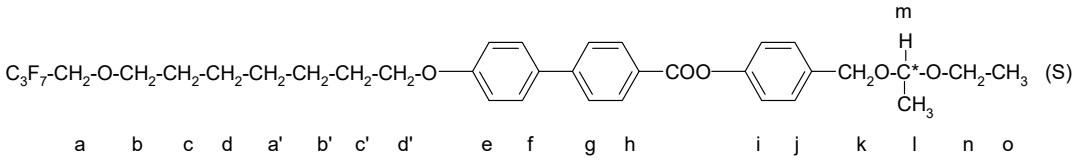


Table S1. ^{1}H NMR chemical shift data (ppm) for mesogens in $CDCl_3$ solution.

Protons	Mesogen A.	Mesogen B.
a	3.917 (2H, t)	3.914 (2H, t)
b	3.670 (2H, t)	3.664 (2H, t)
c	2.147 (2H, m)	1.415-1.872 (10H, m)
d	4.037 (2H, t)	
a′		
b′		
c′		
d′		3.966 (2H, t)
e	7.023 (2H, d)	7.028 (2H, d)
f	7.158 (2H, d)	7.163 (2H, d)
g	7.616 (2H, d)	7.622 (2H, d)
h	7.726 (2H, d)	7.715 (2H, d)
i	6.992 (2H, d)	6.988 (2H, d)
j	8.246 (2H, d)	8.257 (2H, d)
k	3.860 (2H, t)	3.853 (2H, t)
l	1.310 (3H, d)	1.307 (3H, d)
m	4.152 (1H, m)	4.040 (1H, m)
n	1.322 (2H, m)	1.319 (2H, m)
o	1.263 (3H, t)	1.259 (3H, t)

Table S2. Values of chemical shifts for the chiral center (atoms "m") of mesogens in ^{1}H and ^{13}C NMR spectra.

Mesogen A.	4.152 67.789	^{1}H NMR [ppm] ^{13}C NMR [ppm]
Mesogen B.	4.040 68.054	^{1}H NMR [ppm] ^{13}C NMR [ppm]

3D PLOTS OF IMAGINARY PART $\varepsilon_{\perp}''$ OF DIELECTRIC PERMITTIVITY VERSUS FREQUENCY AND TEMPERATURE AT COOLING WITH THE 10 V DC FIELD FOR BOTH STUDIED MESOGENS

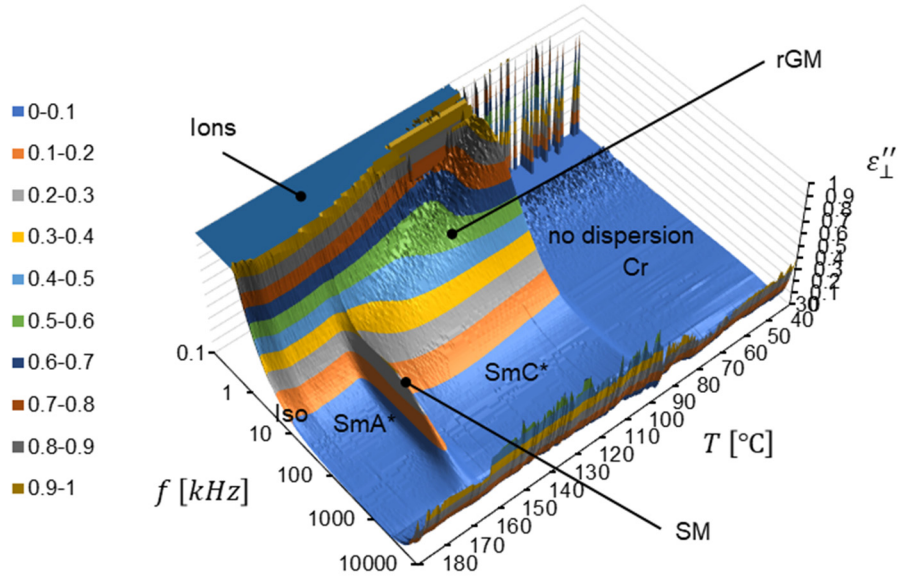


Figure S7. Imaginary part $\varepsilon_{\perp}''$ of dielectric permittivity for the compound 3PhPhCH$_2$O. In 5 μm thin cell measurement at cooling, planarly aligned, with gold electrodes. Cooling rate 0.5°C/min. The 10 V DC field. Isotropic liquid, the SmA* (soft mode: SM) and the SmC* (residual Goldstone mode: rGM) phases, and molecular crystal (Cr) are observed.

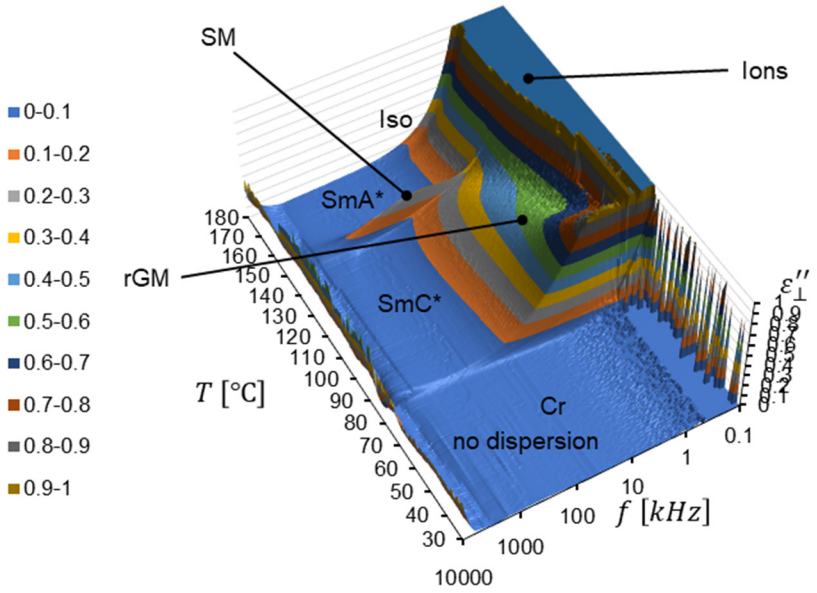


Figure S8. Imaginary part $\varepsilon_\perp''$ of dielectric permittivity for the compound 3PhPhCH$_2$O. In 5 μm thin cell measurement at cooling, planarly aligned, with gold electrodes. Cooling rate 0.5°C/min. The 10 V DC field. Isotropic liquid, the SmA* (soft mode: SM) and the SmC* (residual Goldstone mode: rGM) phases, and molecular crystal (Cr) are observed.

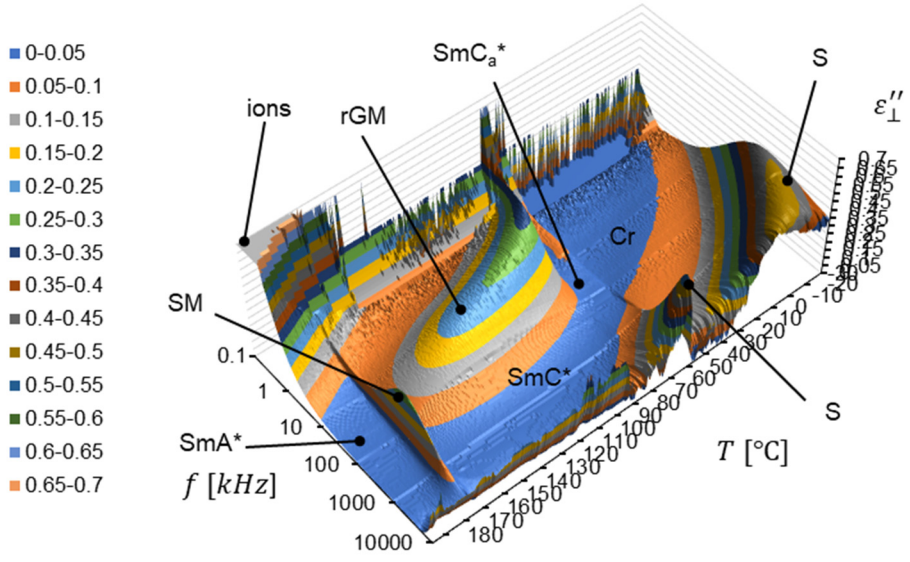


Figure S9. Imaginary part $\varepsilon_\perp''$ of dielectric permittivity for the compound 7PhPhCH$_2$O. In 5 μm thin cell measurement at cooling, planarly aligned, with gold electrodes. Cooling rate 0.5°C/min. The 10 V DC field. The SmA* (soft mode: SM), the SmC* (residual Goldstone mode: rGM), the SmC_a* (molecular S-mode) phases, and molecular crystal (Cr) (molecular S-mode) are observed.

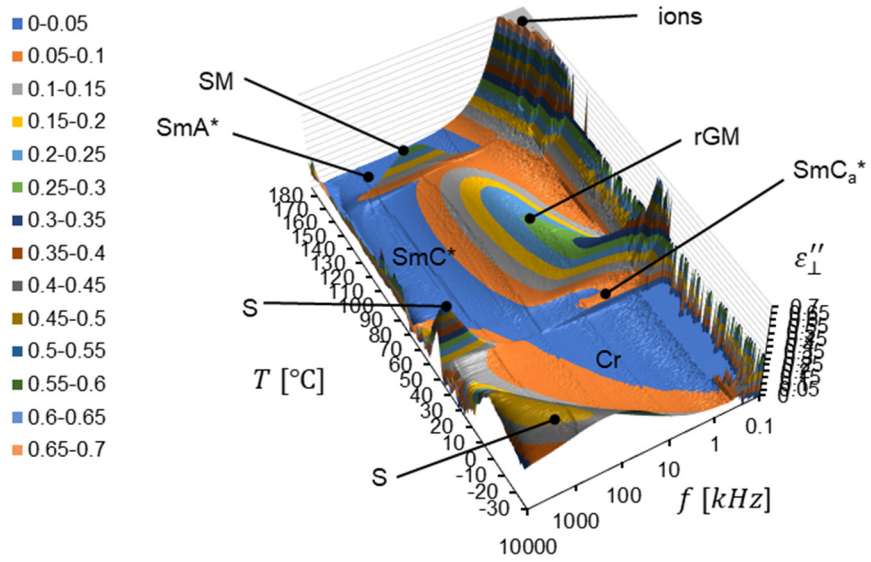


Figure S10. Imaginary part $\varepsilon_\perp''$ of dielectric permittivity for the compound 7PhPhCH$_2$O. In 5 μm thin cell measurement at cooling, planarly aligned, with gold electrodes. Cooling rate 0.5°C/min. The 10 V DC field. The SmA* (soft mode: SM), the SmC* (residual Goldstone mode: rGM), the SmC$_a$* (molecular S-mode) phases, and molecular crystal (Cr) (molecular S-mode) are observed.