

DOPC: DPPC: Chol

1:1:1

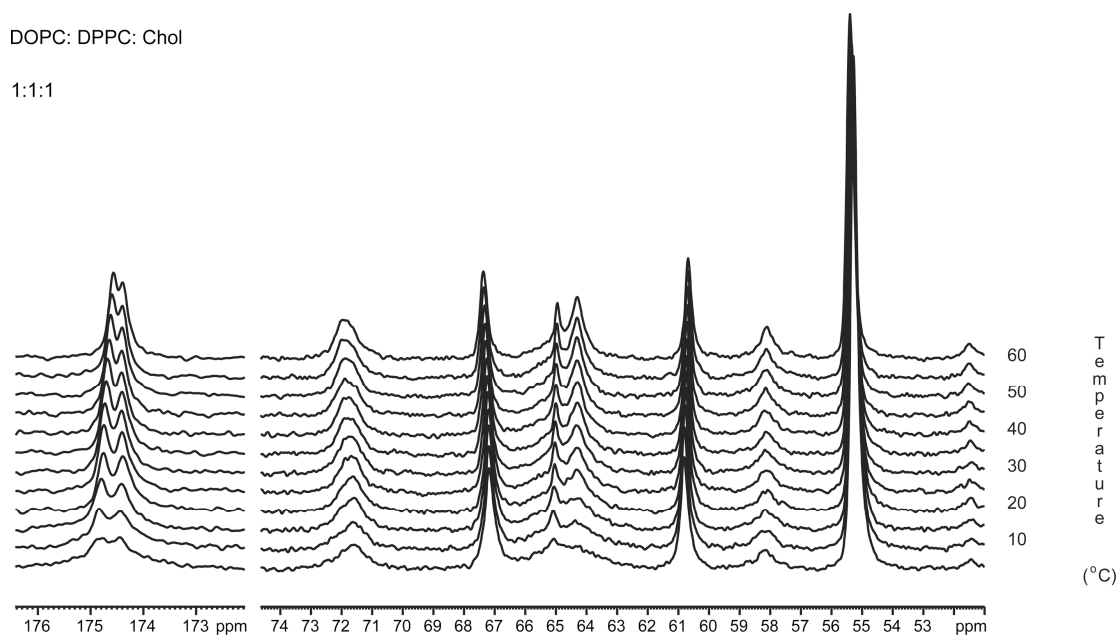


Fig. S1:-  $^{13}\text{C}$  MAS NMR of DOPC/DPPC- $d_{62}$ /Chol (1:1:1) of carbonyl (left) and glycerol/headgroup interfacial region at 5-60°C

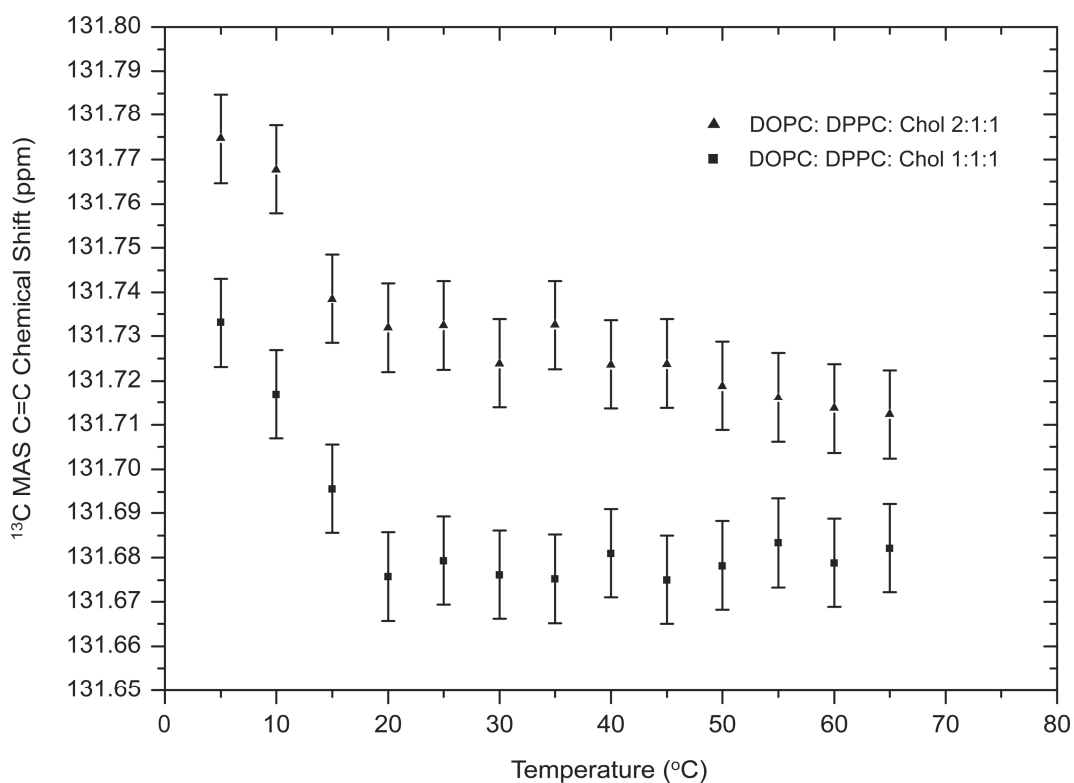


Fig. S2:-  $^{13}\text{C}$  MAS NMR of DOPC/DPPC- $d_{62}$ /Chol (1:1:1(bottom), 2:1:1 (top)) of alkene double bond of DOPC at 5-60°C

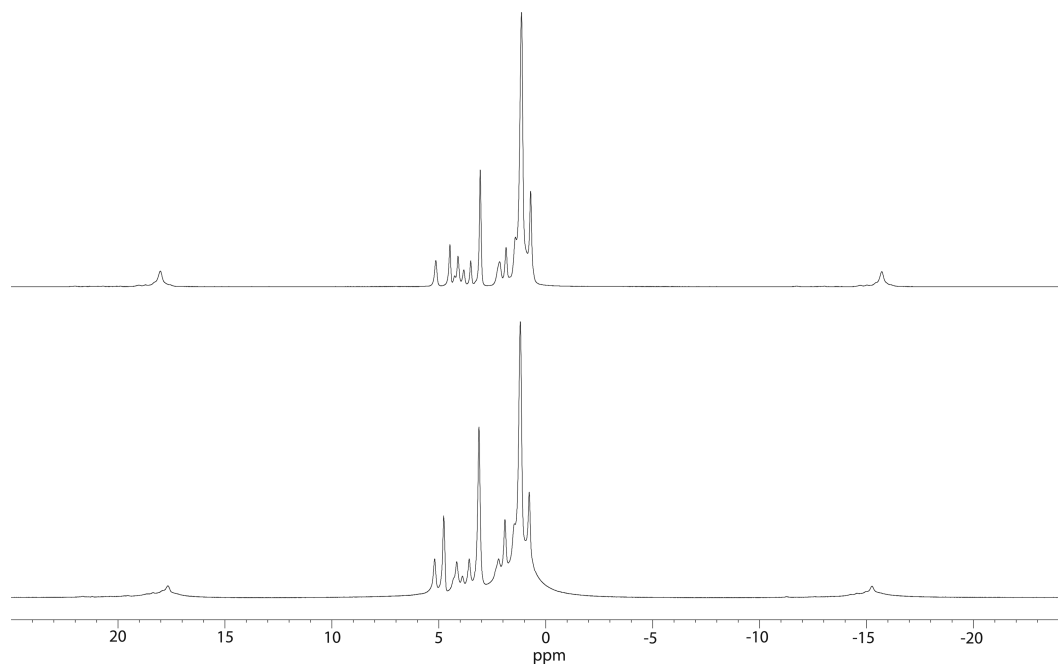


Fig. S3:- Normalised  $^1\text{H}$  MAS NMR of DOPC/DPPC/Chol (1:1:1). Peak assignments are given in ref. 42. Top spectrum  $47^\circ\text{C}$ , bottom spectrum  $5^\circ\text{C}$ . Note broadening of methylene peak at  $5^\circ\text{C}$ .

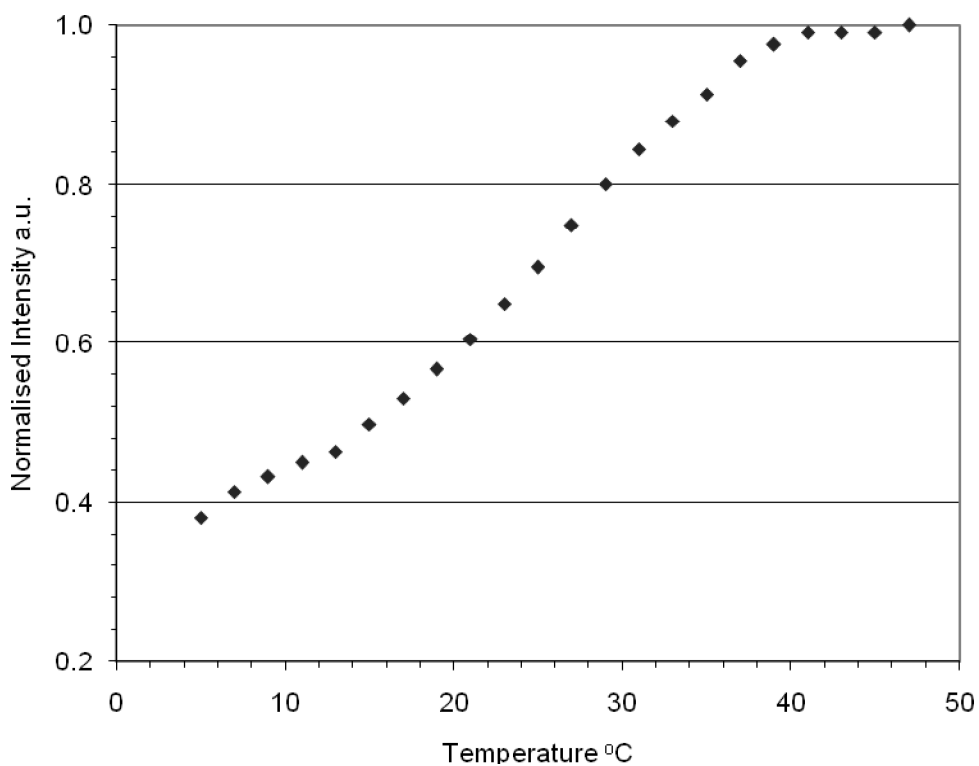


Fig. S4:-  $^1\text{H}$  MAS NMR methylene peak intensity against temperature,  $5$ - $47^\circ\text{C}$ .

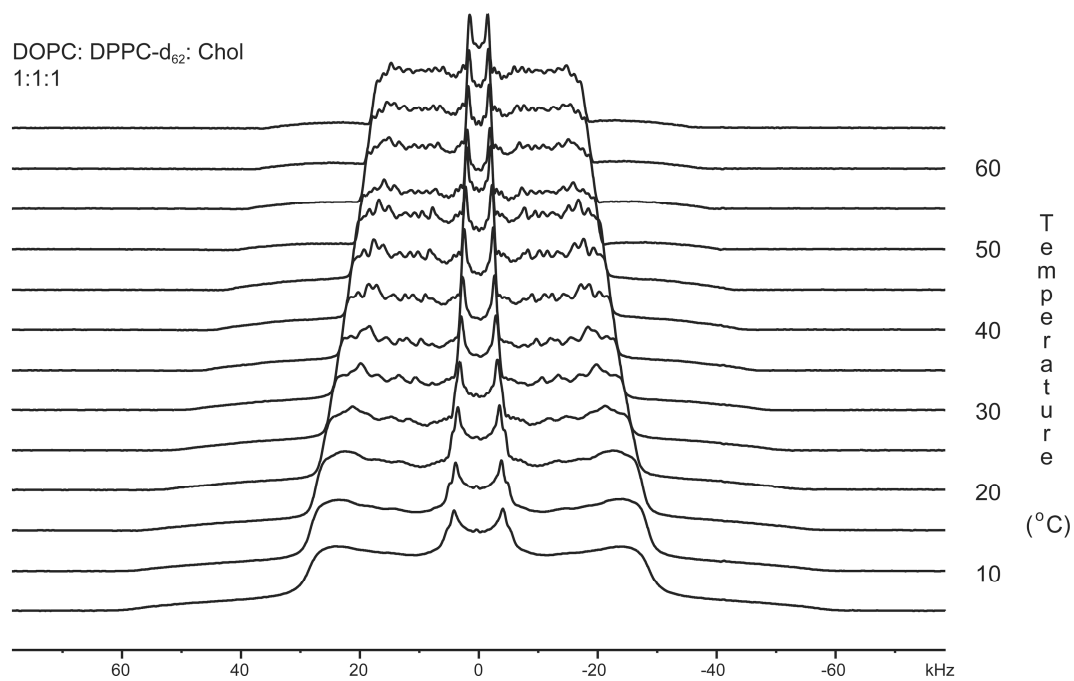


Fig. S5:-  $^2\text{H}$  NMR of DOPC/DPPC/Chol (1:1:1) as a function of temperature, 5-65°C.

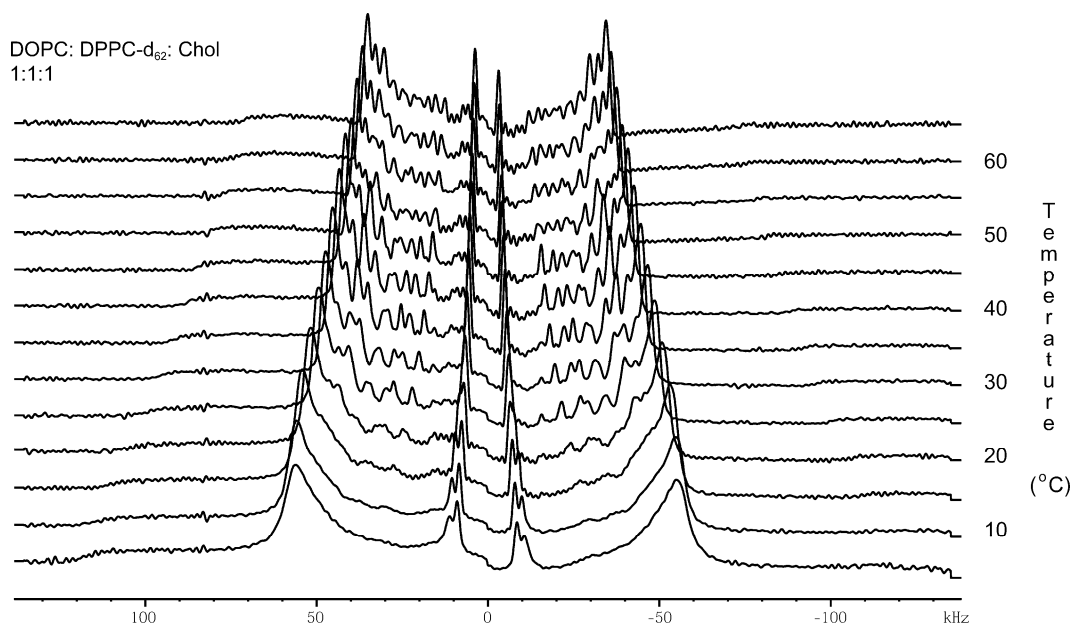


Fig. S6:- Depaked  $^2\text{H}$  NMR of DOPC/DPPC/Chol (1:1:1) as a function of temperature, 5-65°C.

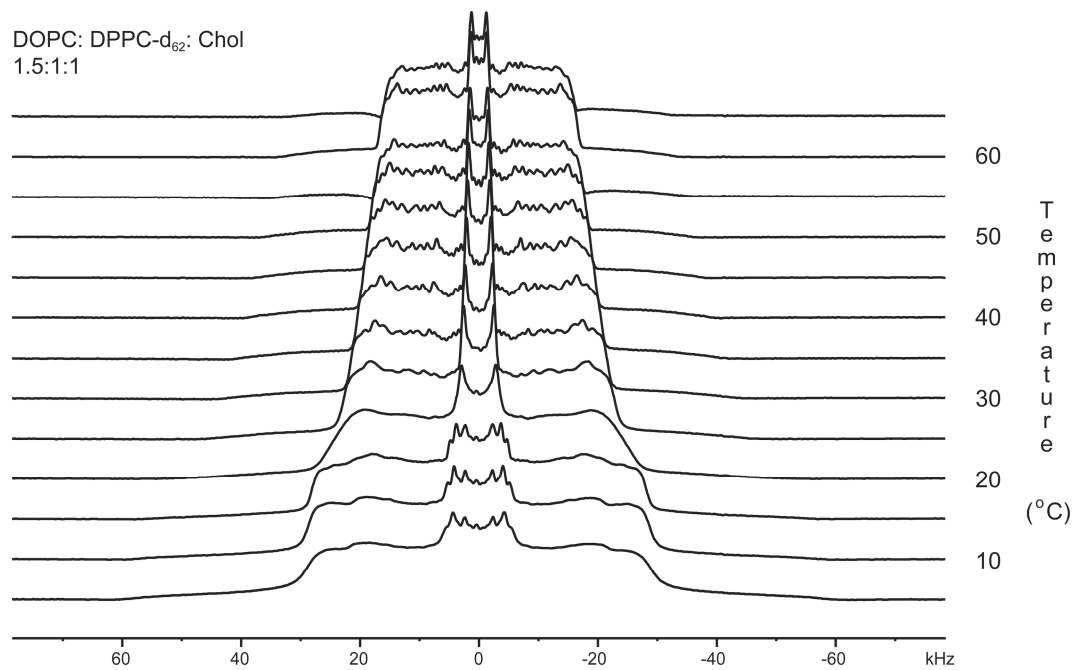


Fig. S7:-  $^2\text{H}$  NMR of DOPC/DPPC/Chol (1.5:1:1) as a function of temperature, 5-65 °C.

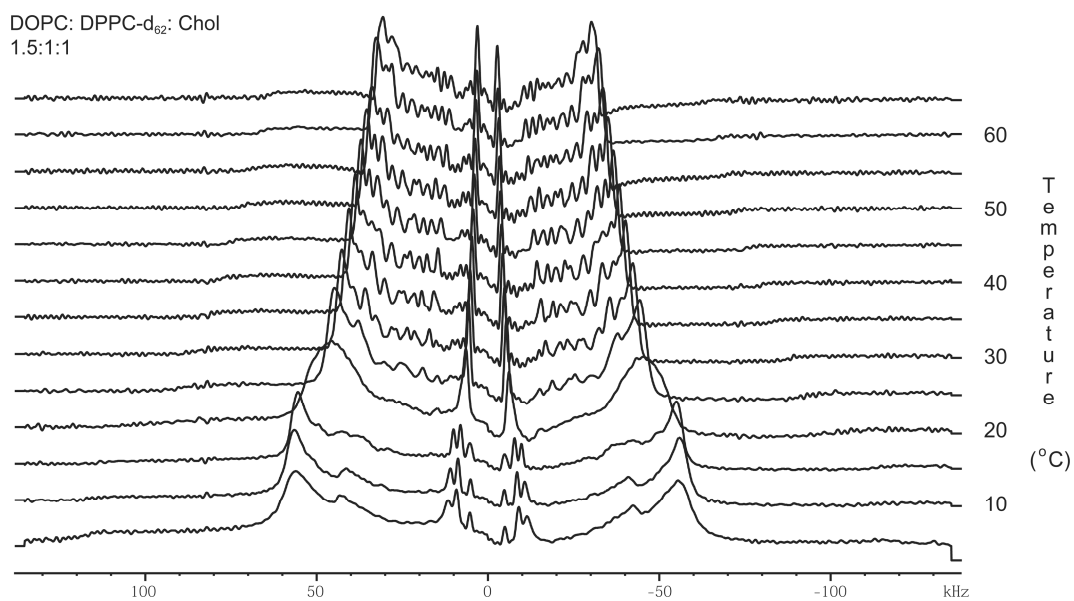


Fig. S8:- Depaked  $^2\text{H}$  NMR of DOPC/DPPC/Chol (1.5:1:1) as a function of temperature, 5-65 °C.

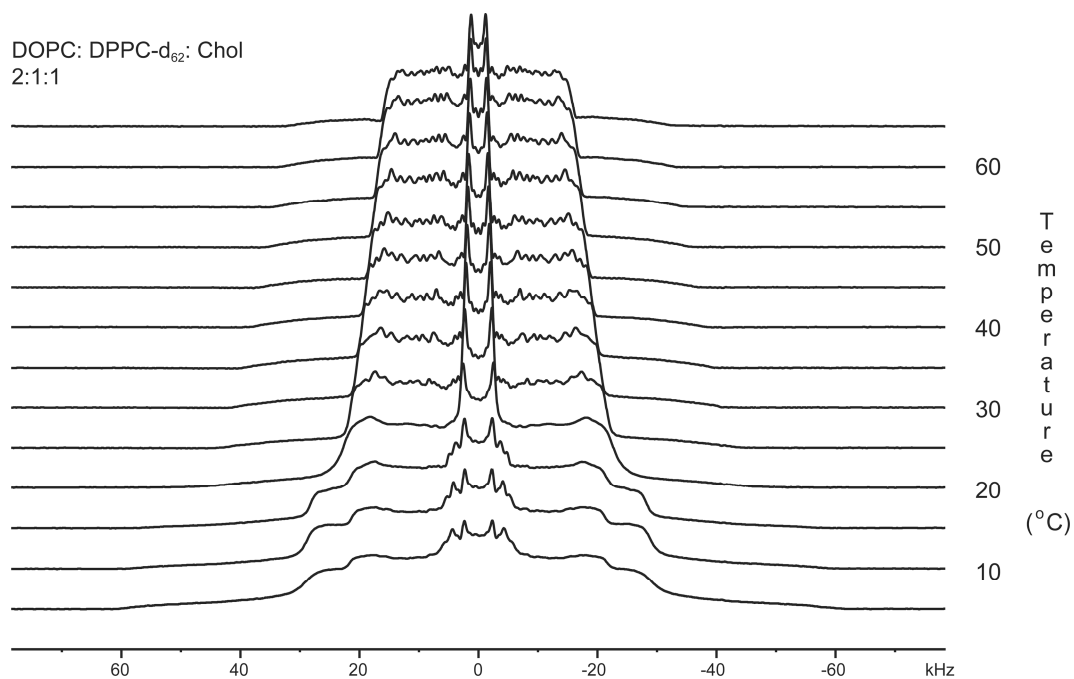


Fig. S9:-  $^2\text{H}$  NMR of DOPC/DPPC/Chol (2:1:1) as a function of temperature, 5-65°C.

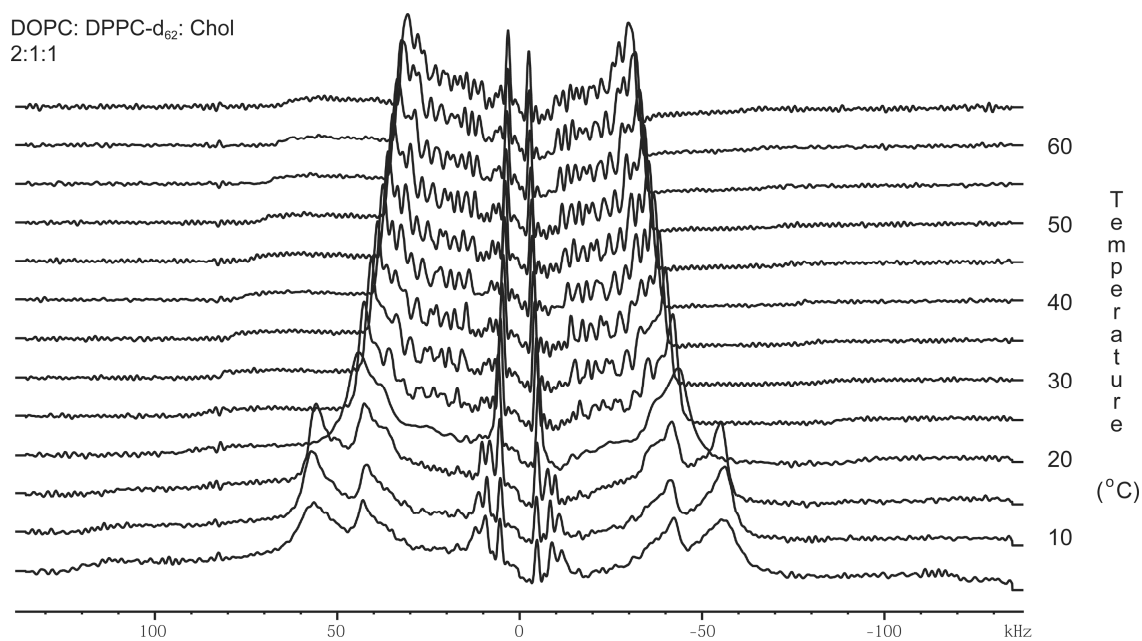


Fig. S10:- Depaked  $^2\text{H}$  NMR of DOPC/DPPC/Chol (2:1:1) as a function of temperature, 5-65 C.

DPPC: DPPC: Chol- $d_1$

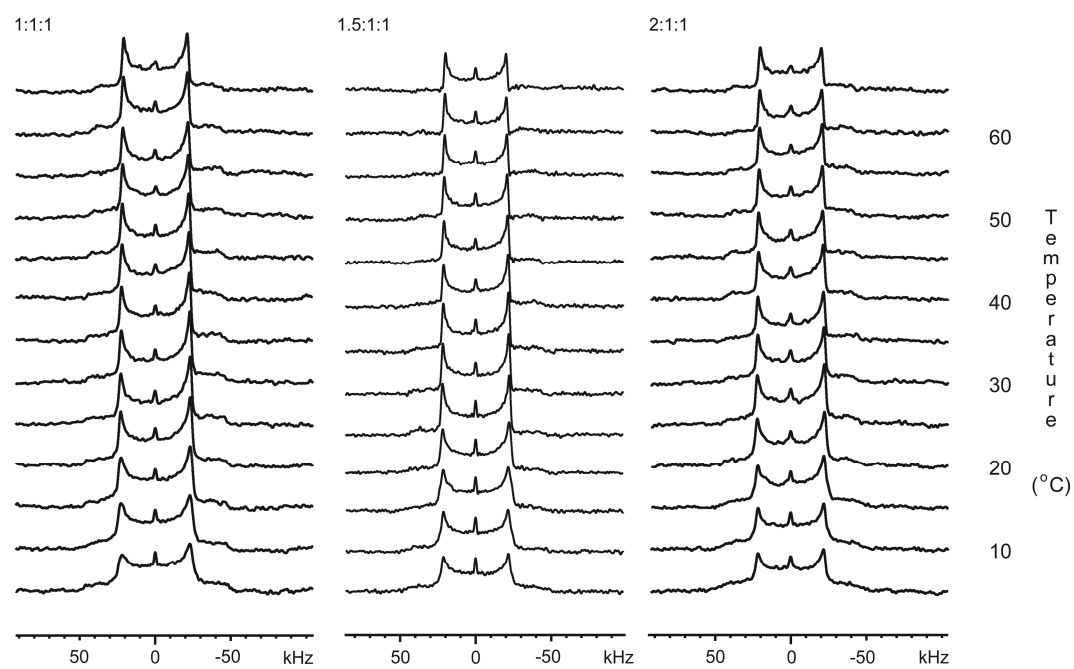


Fig. S11:  $^2\text{H}$  NMR of Chol- $d_1$  in DPPC/DPPC/Chol- $d_1$  (1:1:1, 1.5:1:1, 2:1:1) as a function of temperature, 5-65°C.