Supplementary material for Rainey & Sykes – Optimizing Oriented Planar Supported Lipid Samples for Solid-State Protein NMR (2 pages).

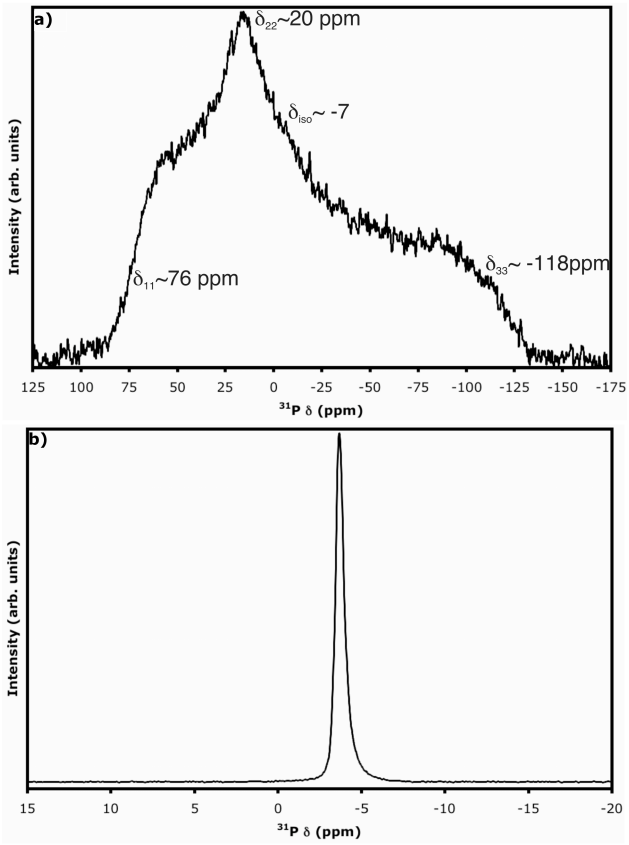

Figure 1. Static solid-state ^{31}P-NMR spectra acquired in homebuilt 6-turn 15x15x1.5 mm (inner dimensions) rectangular flattened copper wire coil. Samples were contained within a hollowed plastic rectangular form glued to two sheets of mica. (a) ~100 mg egg phosphatidylcholine; (b) ~200 μL of 1 M phosphate buffer (pH ~4.7). Chemical shift values shown in (a) provide good simulation of lineshape using SIMPSON.

Table 1 (see following page). Lipid film morphologies observed from the set of eight solvents with varying dielectric constant (ε) used to test characteristics of lipid film morphology as cast on freshly cleaved muscovite mica.[a]

Solvent	ε [b]	POPC deposit morphology	POPG deposit morphology	DOPA deposit morphology	DOPE deposit morphology
Chloroform	4.81	Localized clumps of transparent lipid.	Translucent film of localized, cloudy deposits.[d]	Localized film of transparent or translucent lipid. Layers apparent from separate aliquot application.	Poor plate coverage. Translucent lipid film.
Dichloromethane	9.00 [c]	Localized clumps of transparent lipid with improved spread compared to $CHCl_3$	Sparingly soluble. Localized white clumps; some opaque film with small bubbles.[d]	Transparent lipid film spread about application point.	Transparent lipid film spread about application point.
3-Pentanol	14.07 [c]	Tiny droplets of transparent lipid, dispersed well over wetted area	Not soluble.	Transparent film covering entire plate, islands of raised lipid.	Improved coverage by translucent film, some bubbles.
HFIP	16.70	Semi-translucent film with very good plate coverage. Noticeable void area around point of solution application.	Translucent/white film with complete coverage. Small islands of elevated lipid. Void at point of application. Lipid collected at edges.	Sparingly soluble. Translucent film with many tiny bubble defects. Noticeable void area around point of solution application.	Translucent lipid film with full plate coverage and raised lipid islands over entire film. No consistent void at application point.
2-Propanol	20.18	Semi-translucent film with very good plate coverage. Major void area around point of solution application.	Not soluble.	Not soluble.	Not soluble.
Ethanol	25.30	Semi-translucent film of lipid with many tiny bubble defects, very well dispersed over plate	Not soluble.	Not soluble.	Not soluble.
TFE	27.68	Translucent film of lipid with larger bubble defect	Not soluble.	Not soluble.	Translucent film covering entire plate with many lipid islands and ridges at plate edges.
Methanol	33.00	Many islands of elevated lipid spread over plate	Not soluble.	Not soluble.	Not soluble.
Water [e]	80.10	Elevated striations of lipid spread over film covering plate; semi-translucent.	Elevated striations of lipid spread over film covering plate; semi-translucent.	Elevated striations (thinner than POPC or POPG) of lipid spread over film covering plate; semi-translucent.	Not soluble at 21°C.

[a] ~ Experiment dependent amounts (1.25-10 mg) of POPC, POPG, DOPA and DOPE were deposited per 15x15 mm plate of mica in 20 μL aliquots of 50-75 mg/mL at 23°C. Film morphologies observed after 14 or more hours in fumehood and remain the same after a further hour under vacuum. [b] ε at 20°C (Lide, 2001). [c] ε calculated for 20°C from polynomial fit for temperature dependence (Lide, 2001). [d] Solubility improved by adding 0.1% methanol and 0.05% water (weight % of POPG). [e] Film from vesicle fusion, not solvent casting. Reference: Lide, D.R. editor. 2001. CRC Handbook of Chemistry and Physics. CRC Press: Boca Raton, FL.