

Supporting Information

Fabrication of Charged Membranes by the Solvent-Assisted Lipid Bilayer (SALB) Formation Method on SiO₂ and Al₂O₃

Seyed R. Tabaei^{1,2}, Setareh Vafaei^{1,2}, Nam-Joon Cho^{*,1,2,3}

¹School of Materials Science and Engineering, Nanyang Technological University, 50 Nanyang Avenue 639798, Singapore

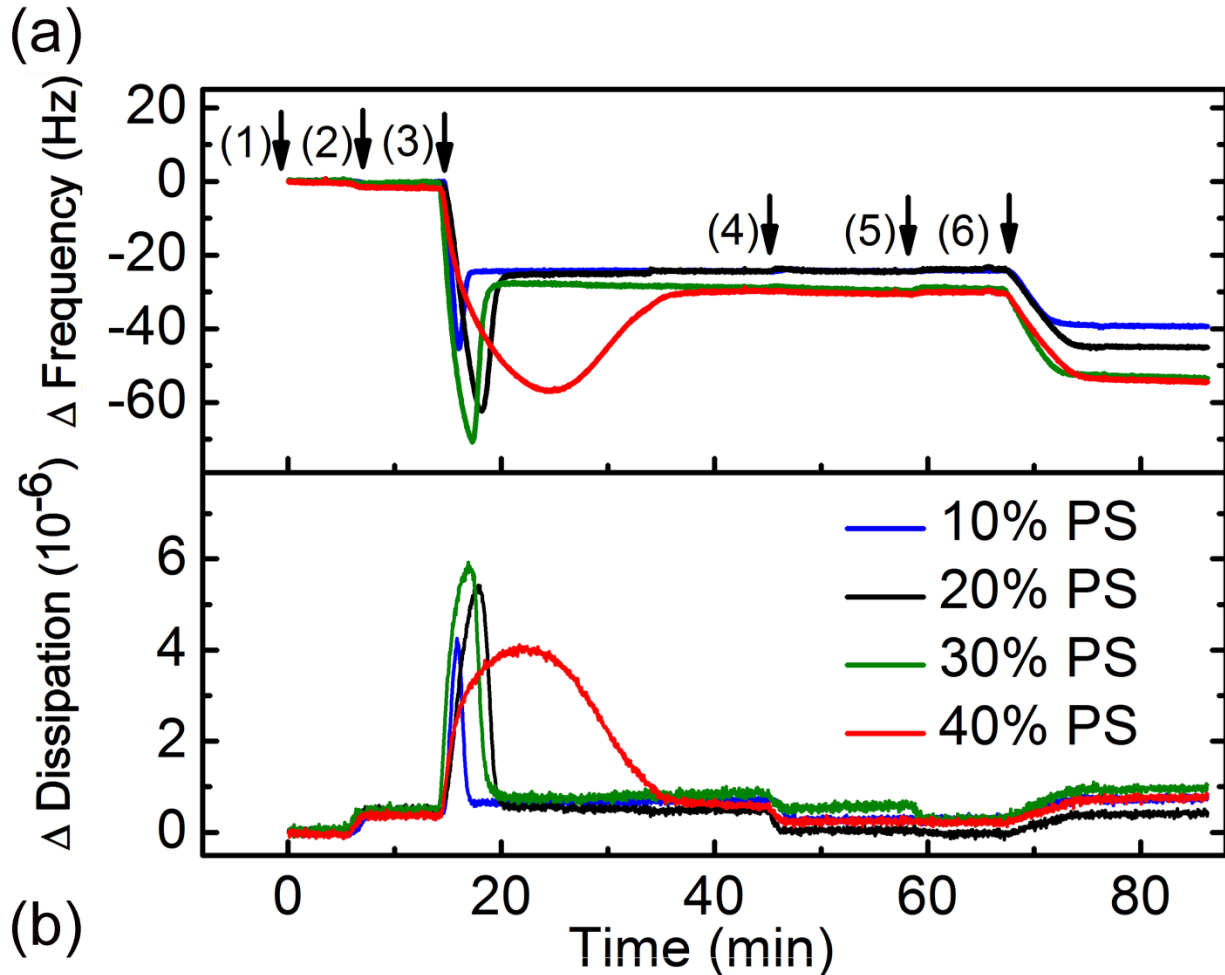
²Centre for Biomimetic Sensor Science, Nanyang Technological University, 50 Nanyang Drive 637553, Singapore

³School of Chemical and Biomedical Engineering, Nanyang Technological University, 62 Nanyang Drive 637459, Singapore

*Corresponding author.

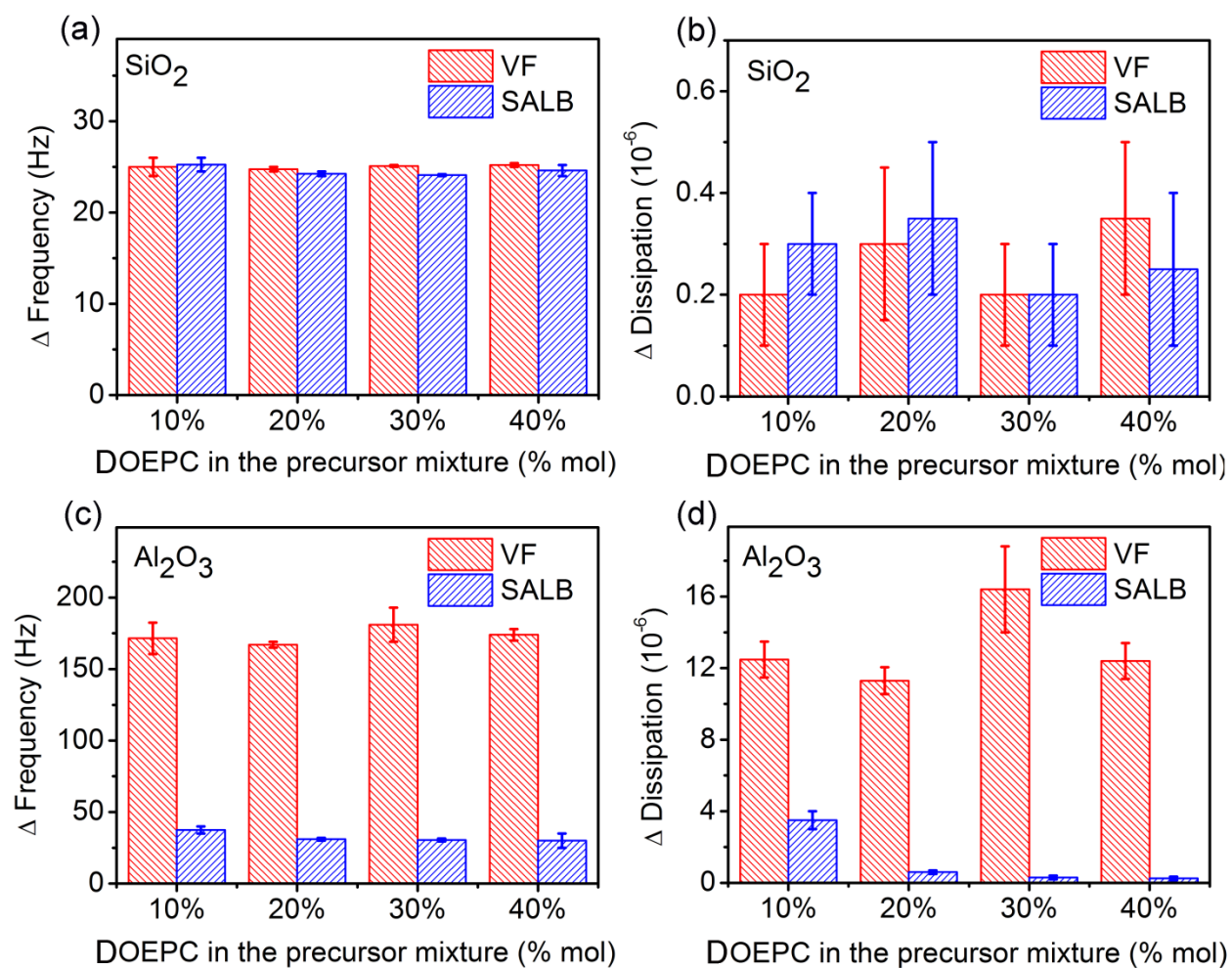
E-mail: njcho@ntu.edu.sg

SI-Fig. 1 Frequency and dissipation response for DOPS containing bilayer formation on SiO_2 at pH 5 using vesicle fusion method. Arrows indicate the injection of (1) tris buffer (10mM Tris, 150mM NaCl, pH 7.5), (2) buffer at pH 5 (10mM Tris, 150mM NaCl, pH 5), (3) lipid vesicle mixture in buffer at pH 5 [red curve: PC/PS (4/6), dashed line: PC/PS (9/1)], (4) buffer wash (pH 7.5), (5) BSA in annexin 5A buffer (10mM Tris, 150mM NaCl, 2 mM CaCl_2 , pH 7.5) and (6) annexin 5A (5 $\mu\text{g/ml}$).



Method	Surface	Composition	Δf (Hz)	ΔD ($\times 10^{-6}$)
Vesicle Fusion	SiO_2 pH 5	10% PS	24.7 ± 0.7	< 0.7
		20% PS	25.6 ± 0.4	< 0.5
		30% PS	27.7 ± 0.7	< 0.7
		40% PS	29.5 ± 0.5	< 0.7

SI-Fig. 2 Summary of QCM-D frequency and energy dissipation responses corresponding to formation of supported bilayer composed of DOPC/DOEPC produced by vesicle fusion and SALB formation method on (a, b) SiO_2 and (c, d) Al_2O_3 .



SI-Fig. 3 Comparison of nonspecific adsorption of BSA protein to bare and positively charged bilayers-coated Al_2O_3 . Negative QCM-D frequency changes upon injection of 0.1 mg/mL BSA indicates protein binding to bilayer defects. The final frequency shift after bilayer formation was set to zero and used as a baseline for frequency.

