Electronic Supplementary Information

Influence of Spacer Length and Rigidity on Properties of Phosphonium Polymers and on their Supramolecular Assembly with a Conjugated Polyelectrolyte

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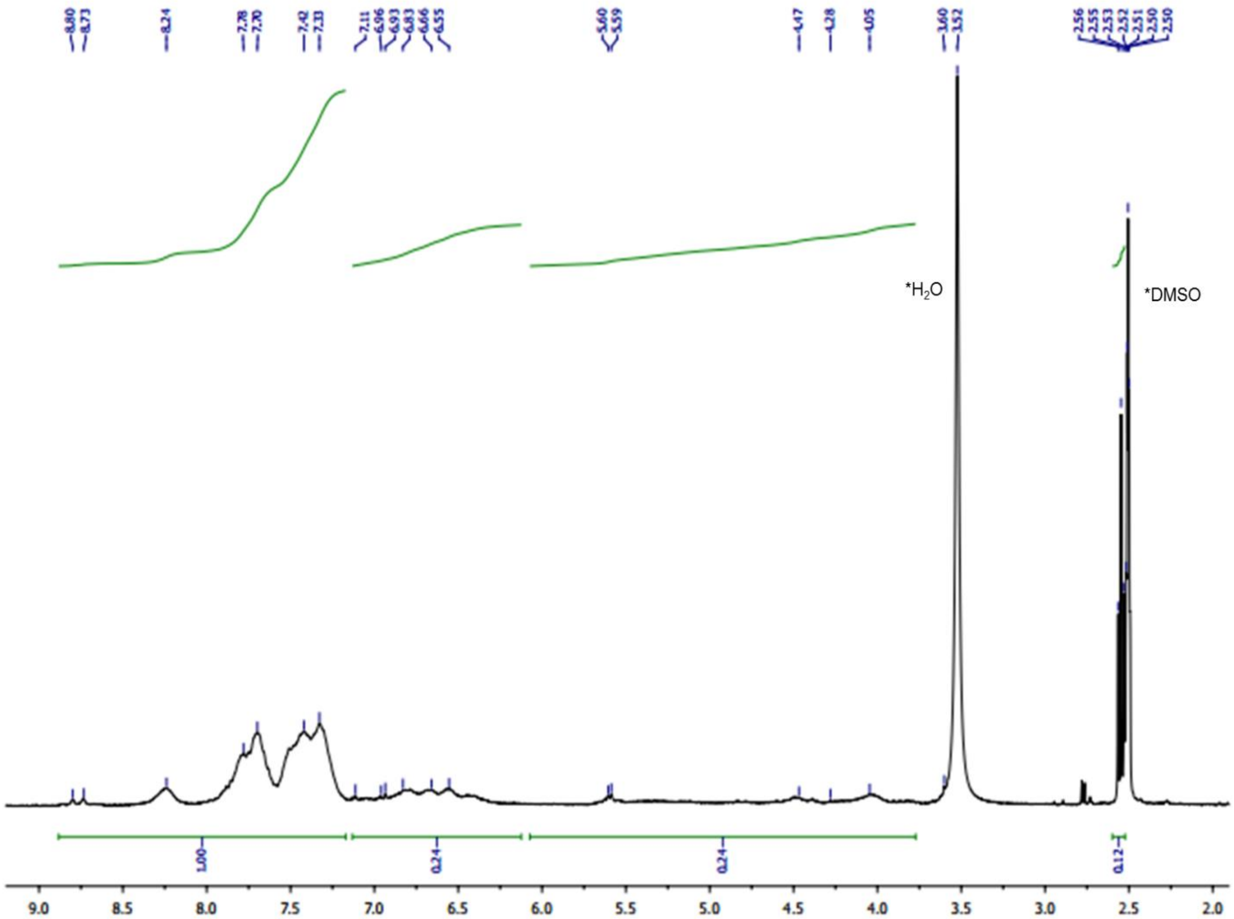

Figure S1. Proton NMR spectrum of **LX1** ($(CD_3)_2SO$, 300 MHz). Peak marked with an asterisk correspond to solvent signals.

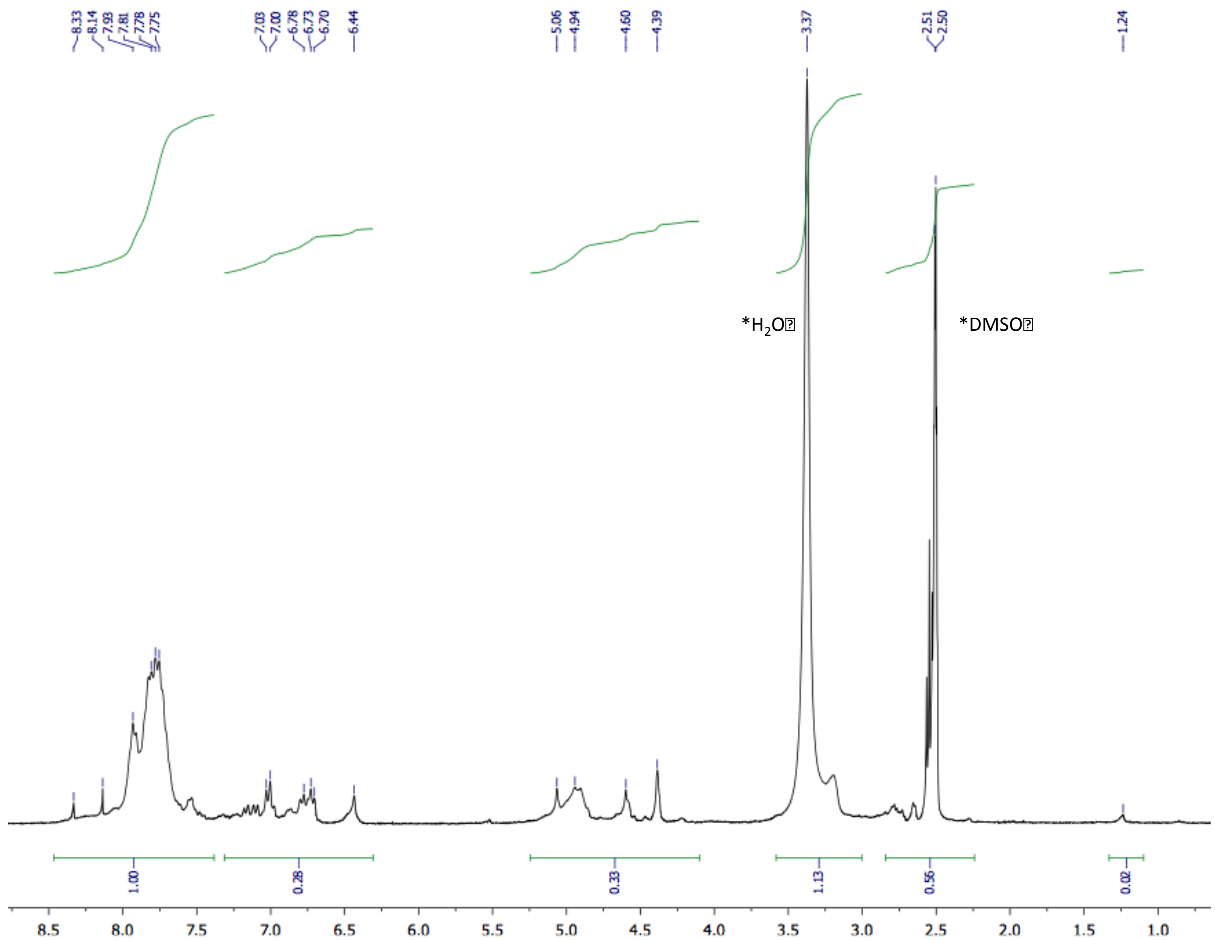

Figure S2. Proton NMR spectrum of **LX2** ($(CD_3)_2SO$, 300 MHz). Peak marked with an asterisk correspond to solvent signals.

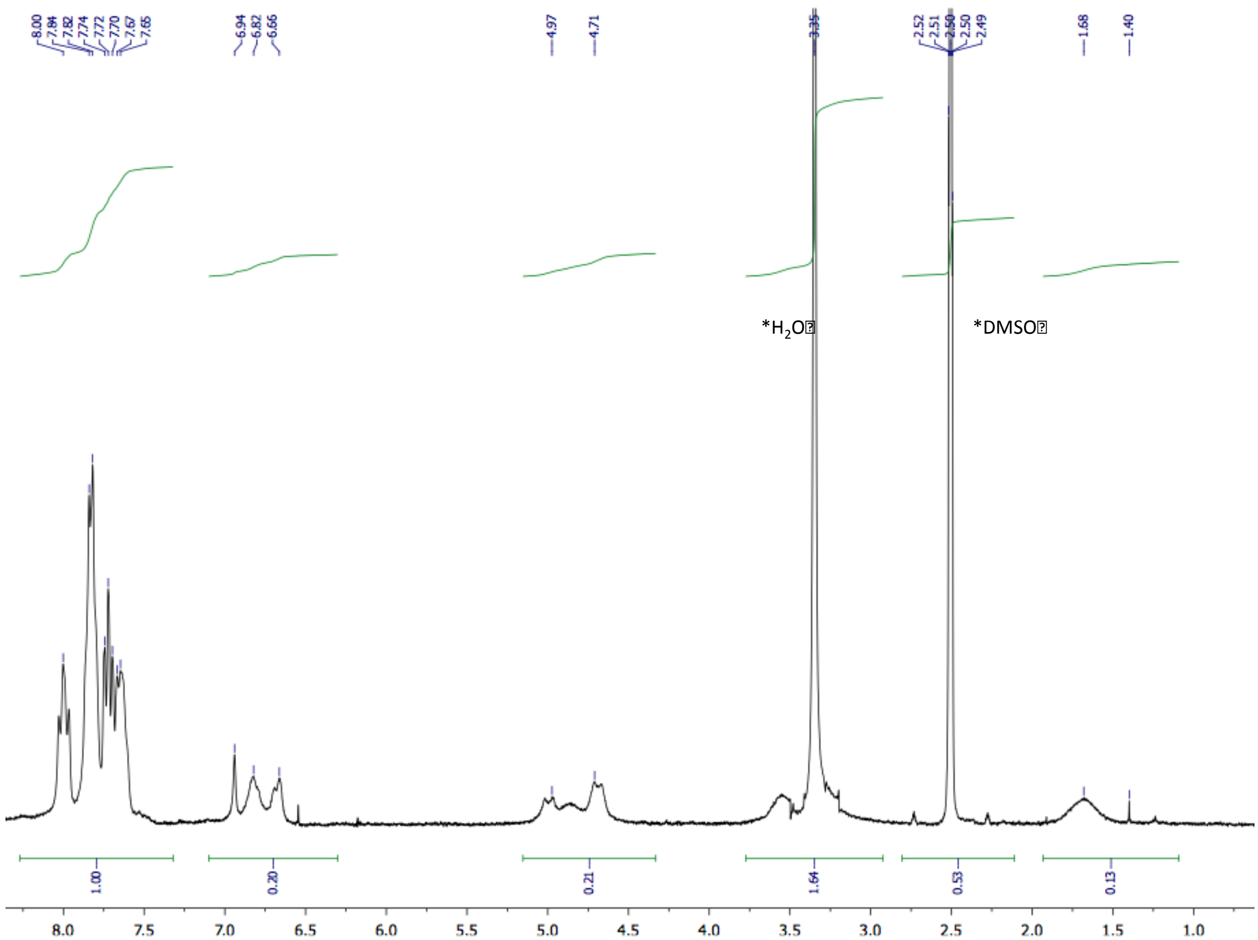

Figure S3. Proton NMR spectrum of **LX3** ($(CD_3)_2SO$, 300 MHz). Peak marked with an asterisk correspond to solvent signals.

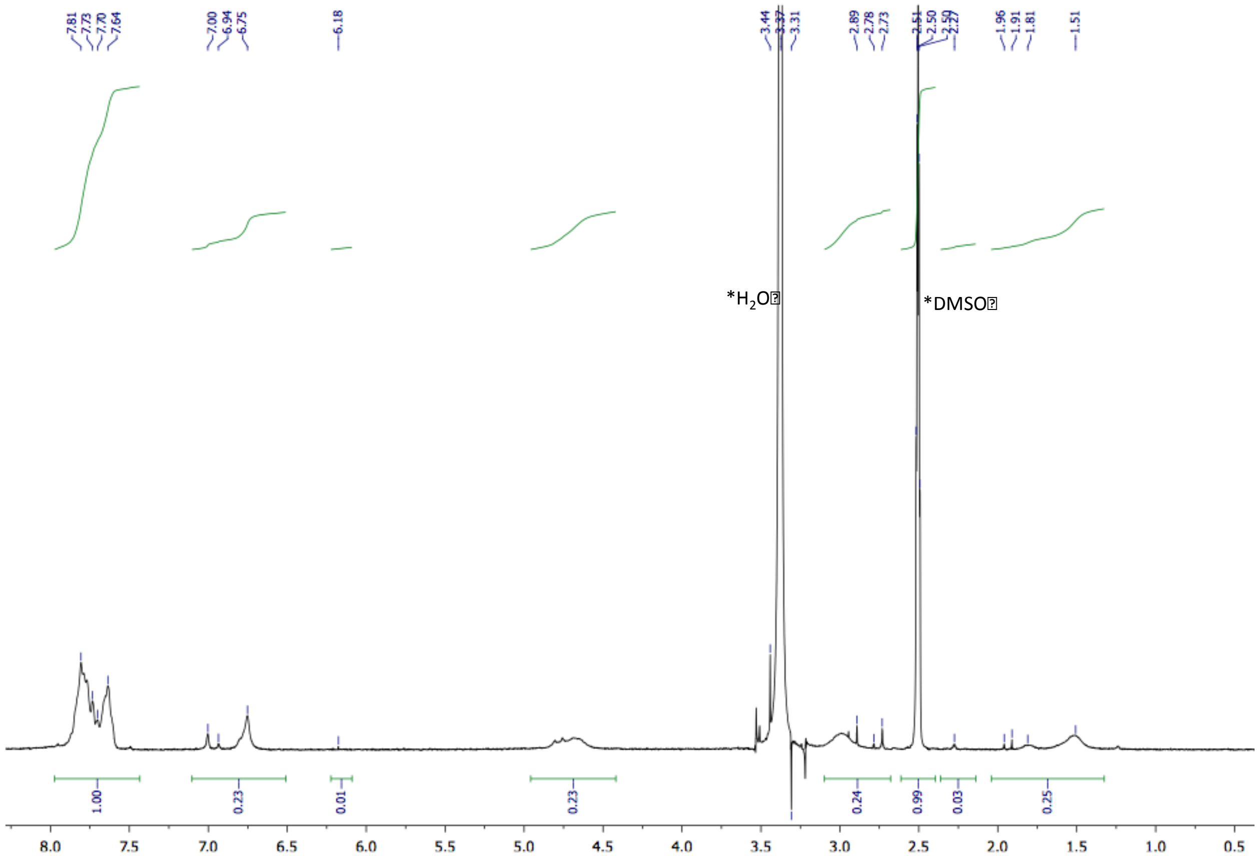

Figure S4. Proton NMR spectrum of **LX4** ($(CD_3)_2SO$, 300 MHz). Peak marked with an asterisk correspond to solvent signals.

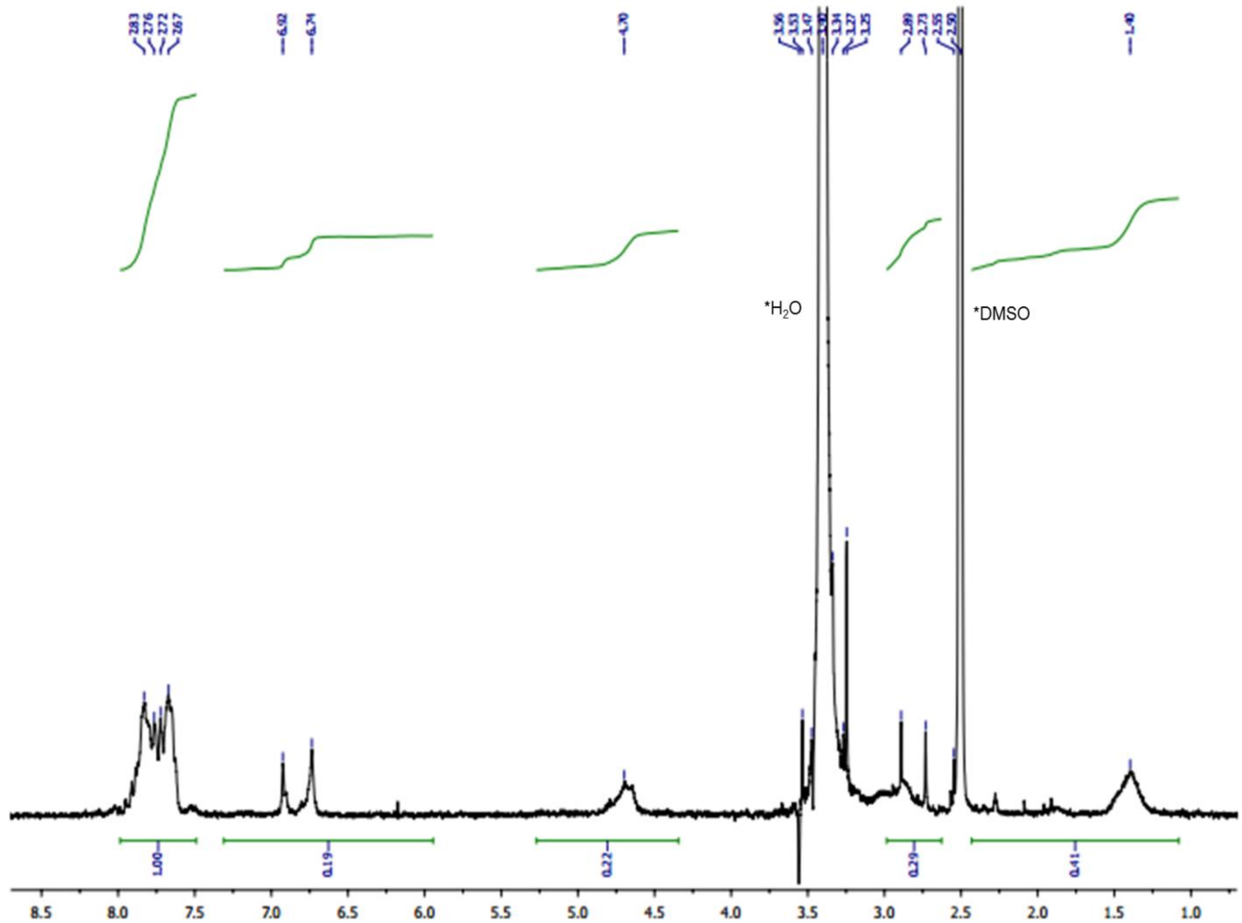

Figure S5. Proton NMR spectrum of **LX5** ($(CD_3)_2SO$, 300 MHz). Peak marked with an asterisk correspond to solvent signals.

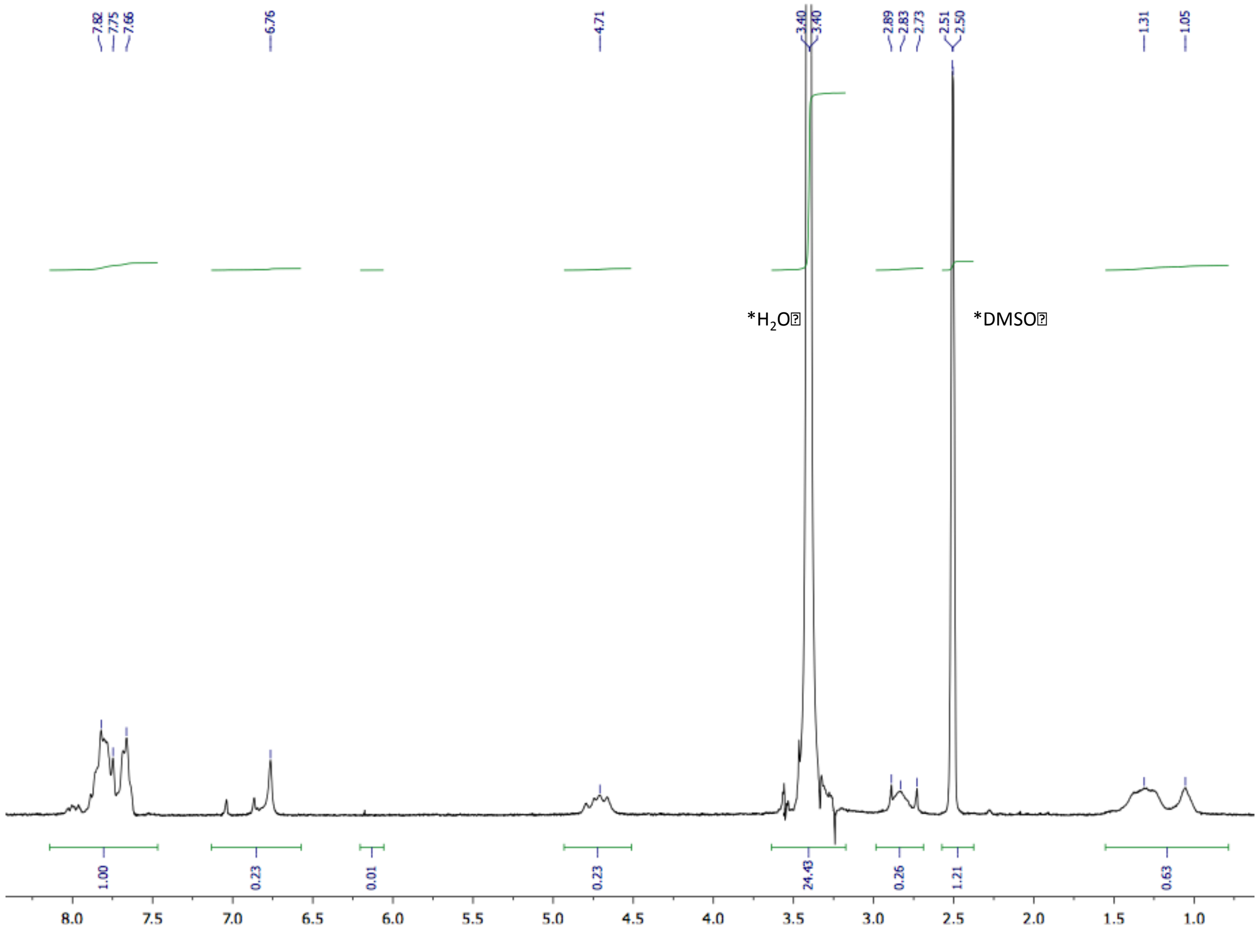

Figure S6. Proton NMR spectrum of **LX8** ($(CD_3)_2SO$, 300 MHz). Peak marked with an asterisk correspond to solvent signals.

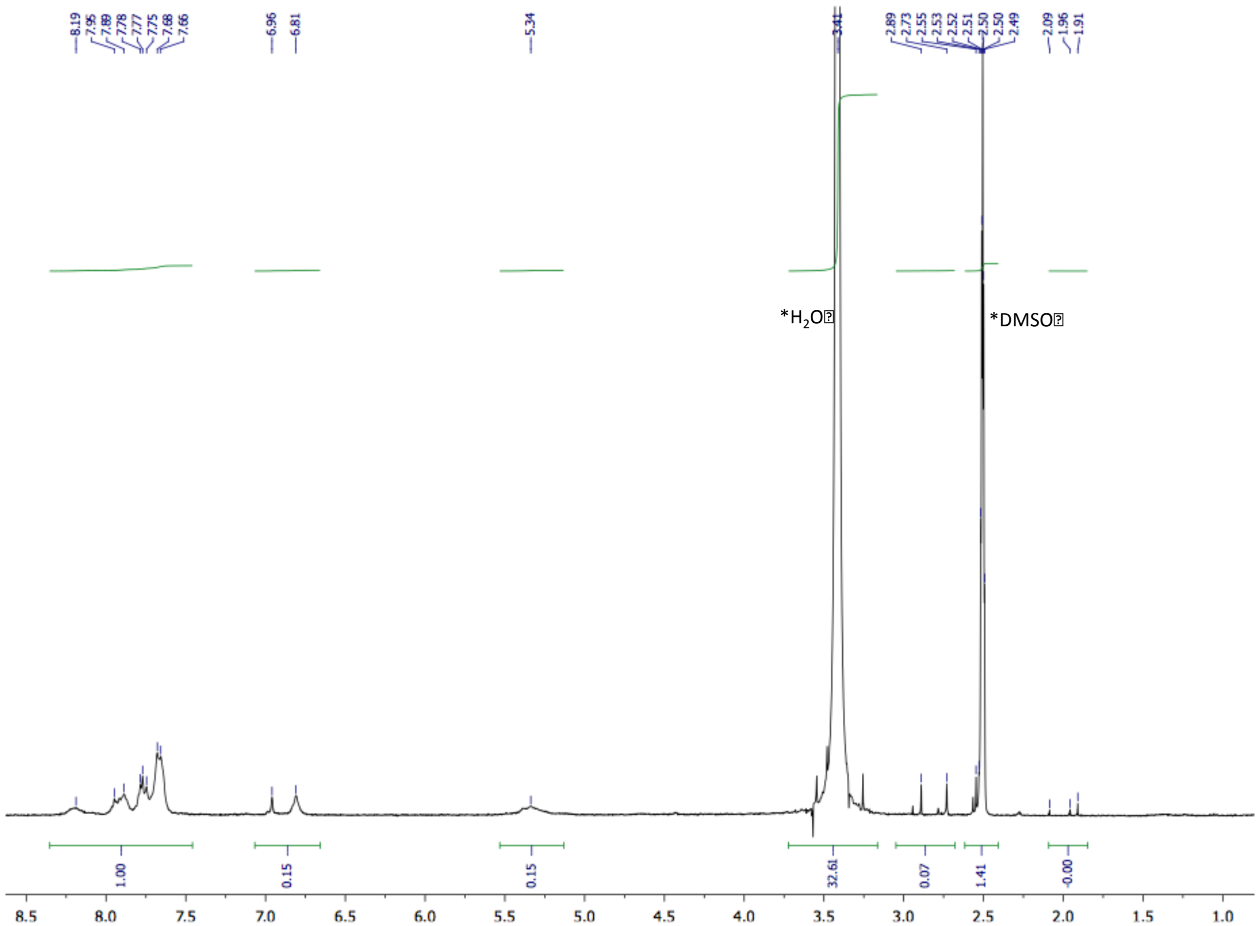

Figure S7. Proton NMR spectrum of **LXPh** ($(CD_3)_2SO$, 300 MHz). Peak marked with an asterisk correspond to solvent signals.

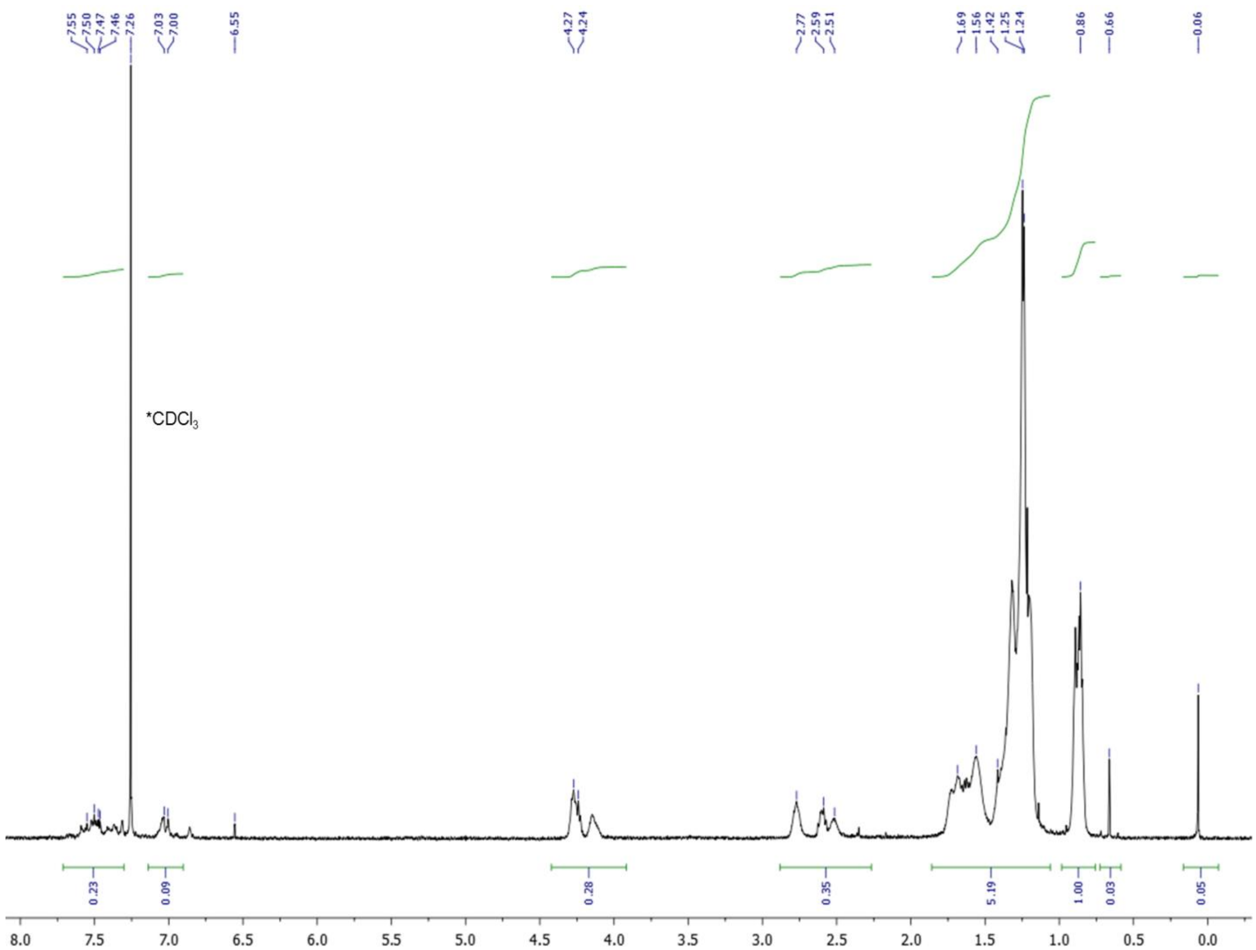

Figure S8. Proton NMR spectrum of **Pc12** ($CDCl_3$, 300 MHz). Peak marked with an asterisk correspond to solvent signals.

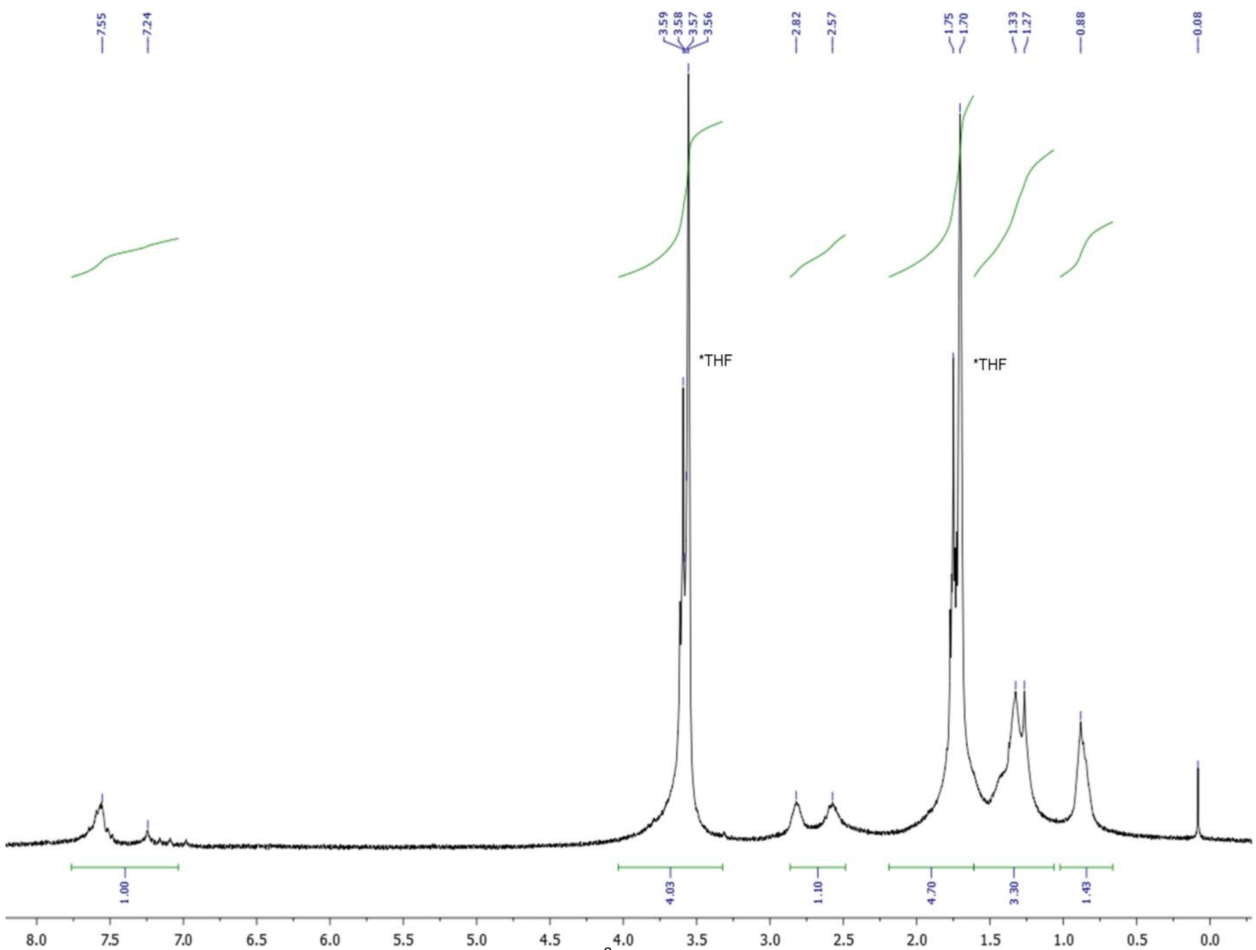

Figure S9. Proton NMR spectrum of **Pc12-100** (THF-d^8, 300 MHz). Peak marked with an asterisk correspond to solvent signals.

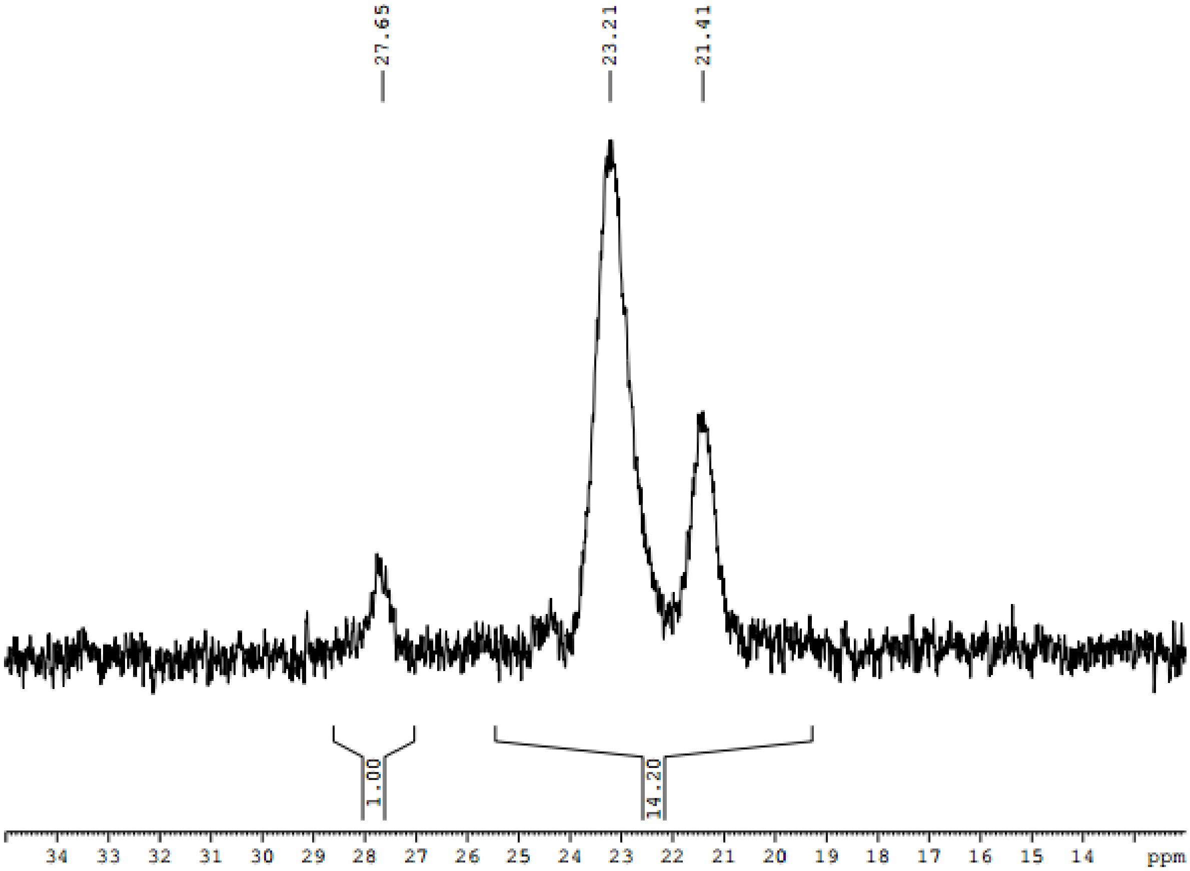

Figure **S10**. Phosphorous-31 NMR of compound **LX1** ($(CD_3)_2SO$, 121 MHz)

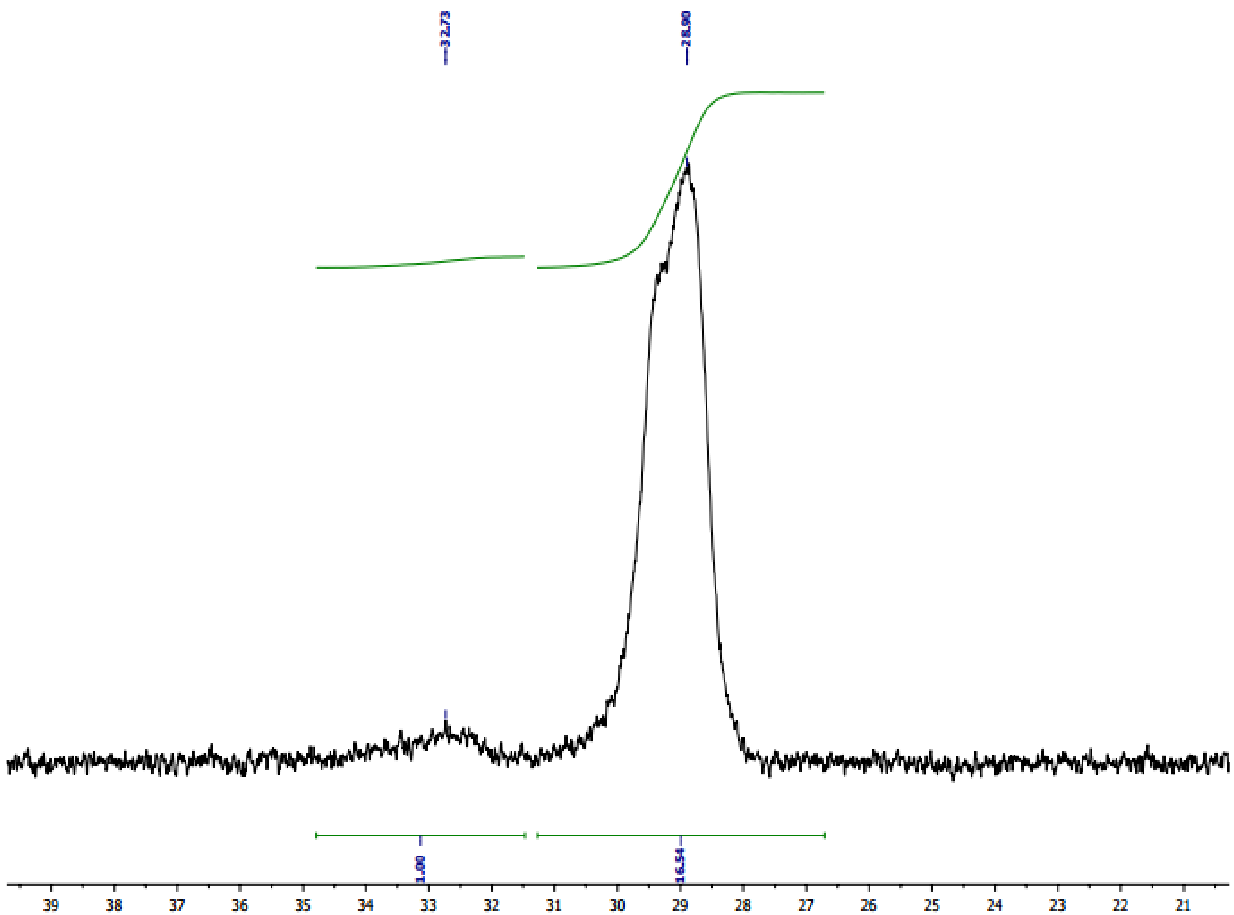

Figure **S11**. Phosphorous-31 NMR of compound **LX2** ($(CD_3)_2SO$, 121 MHz)

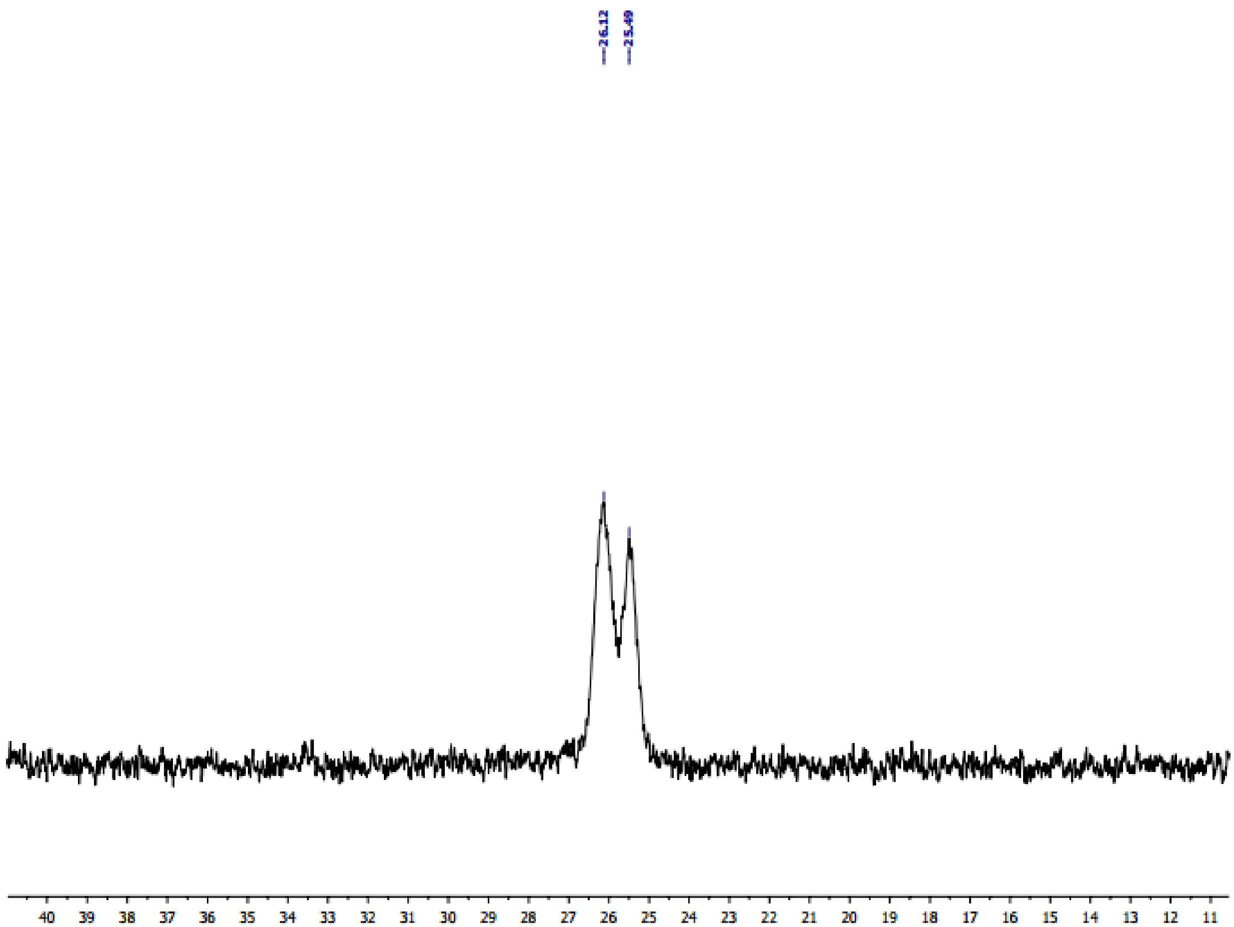

Figure **S12**. Phosphorous-31 NMR of compound **LX3** ($(CD_3)_2SO$, 121 MHz)

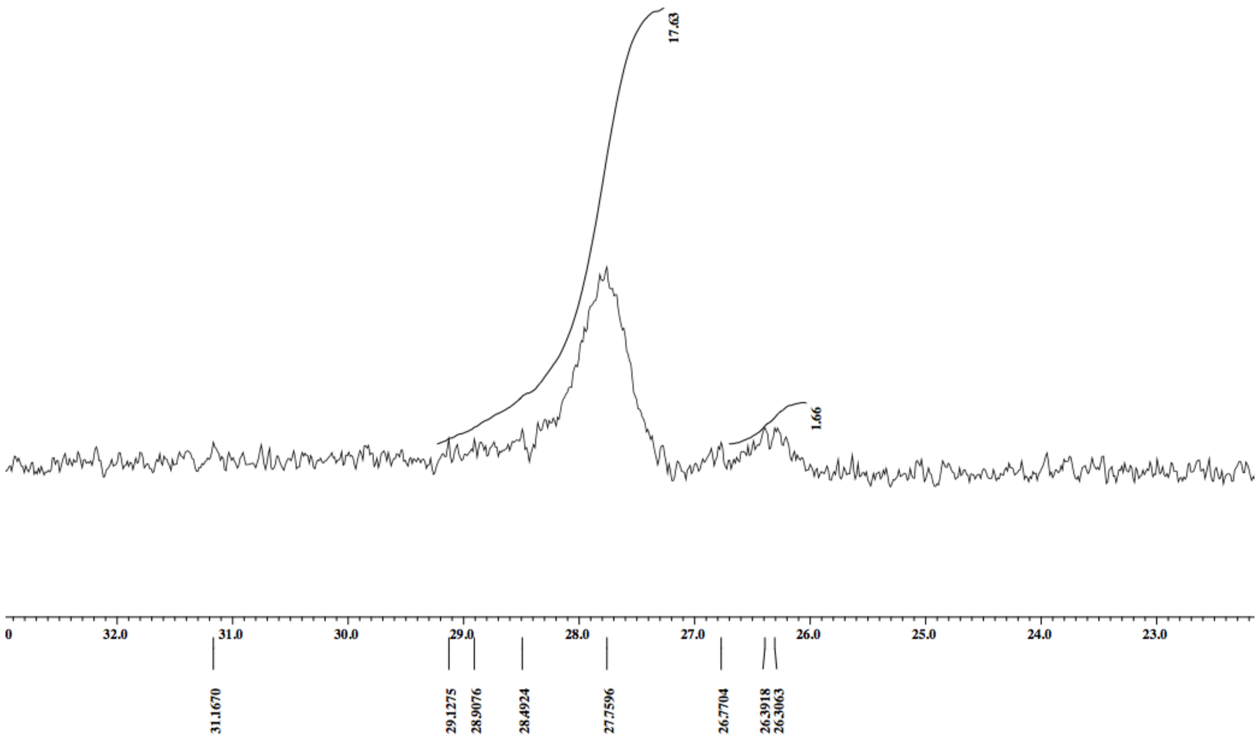

Figure **S13**. Phosphorous-31 NMR of compound **LX4** ($(CD_3)_2SO$, 121 MHz)

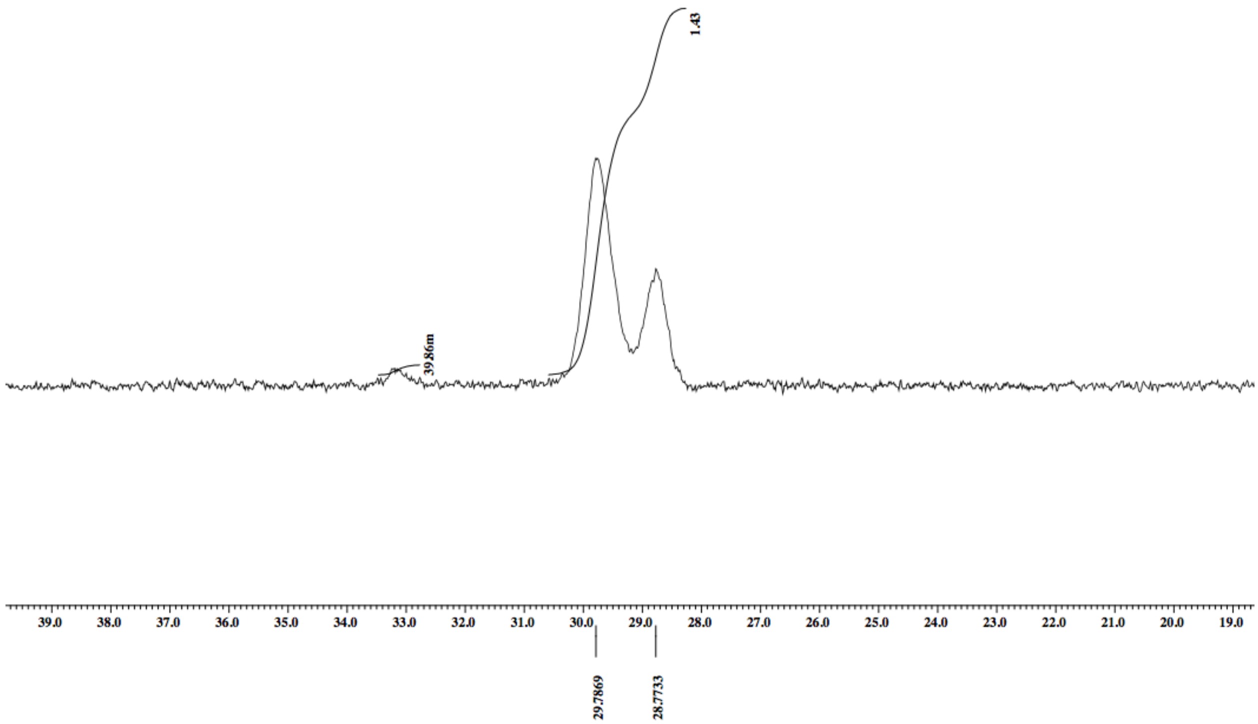

Figure **S14**. Phosphorous-31 NMR of compound **LX5** ($(CD_3)_2SO$, 121 MHz)

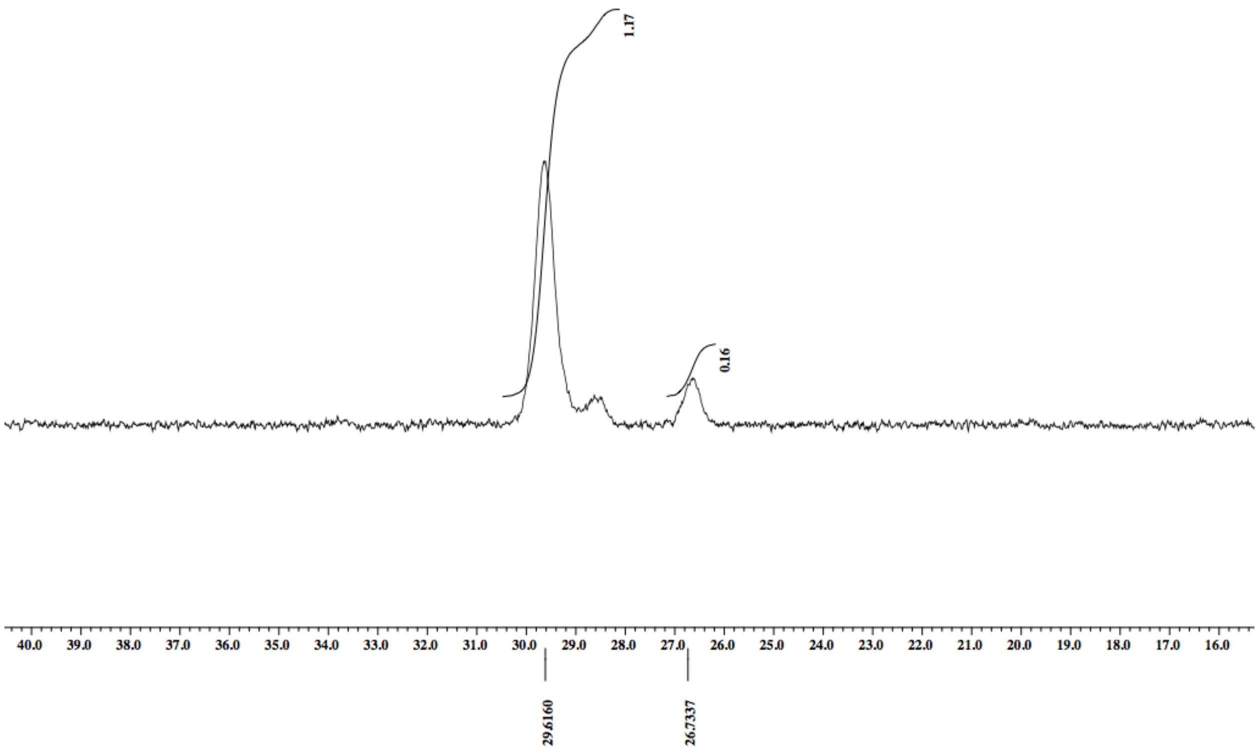

Figure **S15**. Phosphorous-31 NMR of compound **LX8** ($(CD_3)_2SO$, 121 MHz)

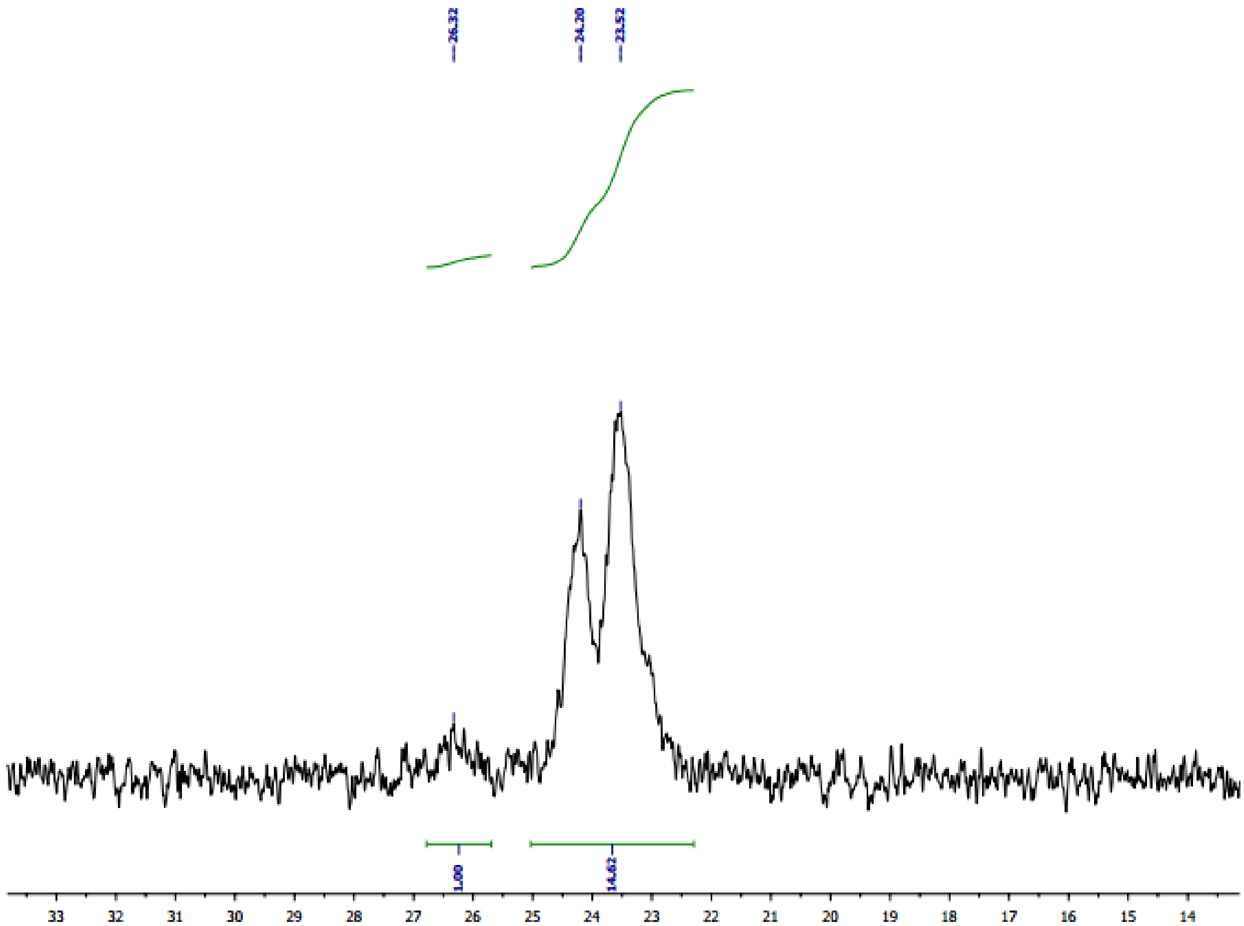

Figure **S16**. Phosphorous-31 NMR of compound **LXPh** ($(CD_3)_2SO$, 121 MHz)

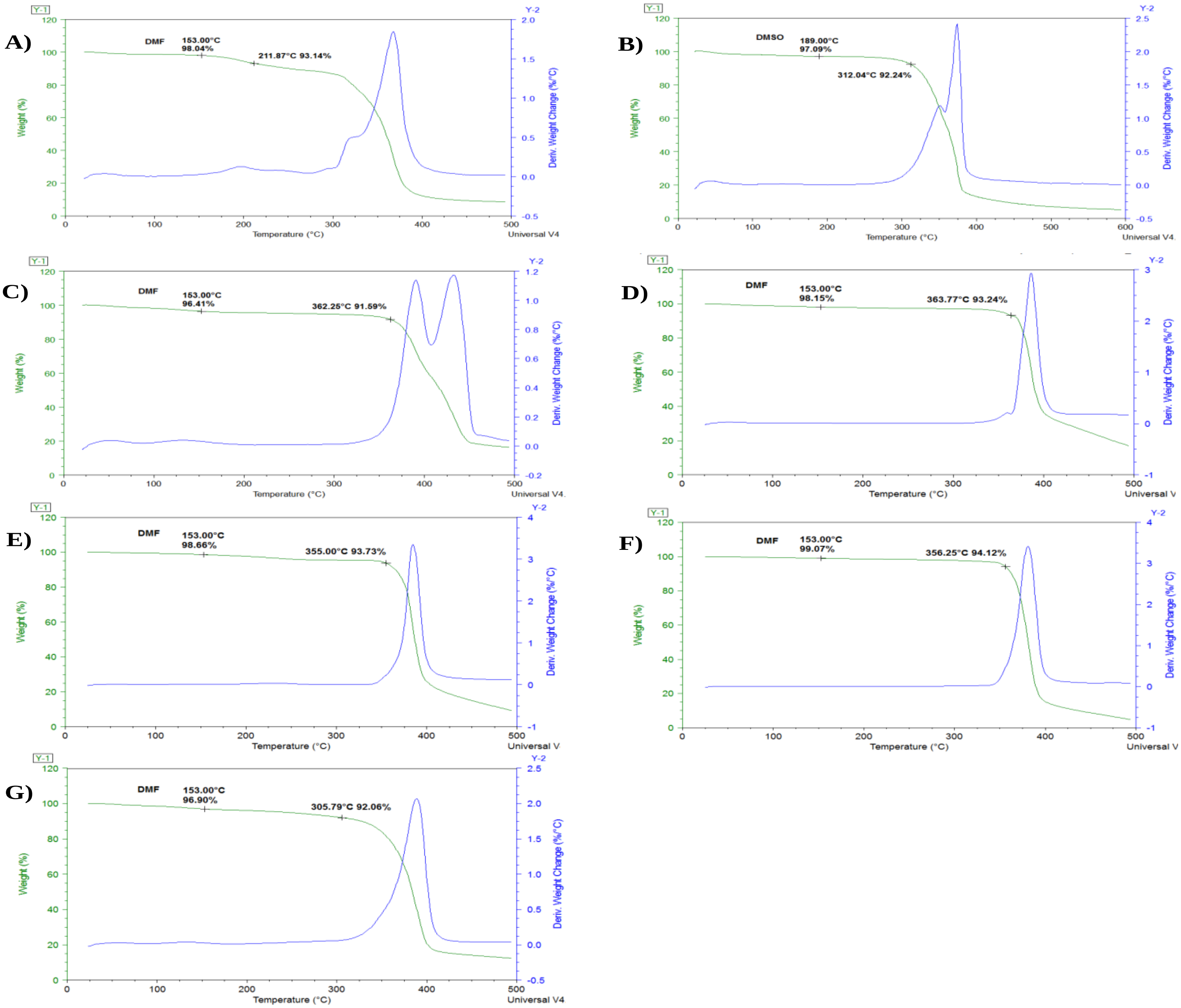

Figure **S17**. TGA of **LX** polymers: **LX1** (A), **LX2** (B), **LX3** (C), **LX4** (D), **LX5** (E), **LX8** (F) and **LXPh** (G).

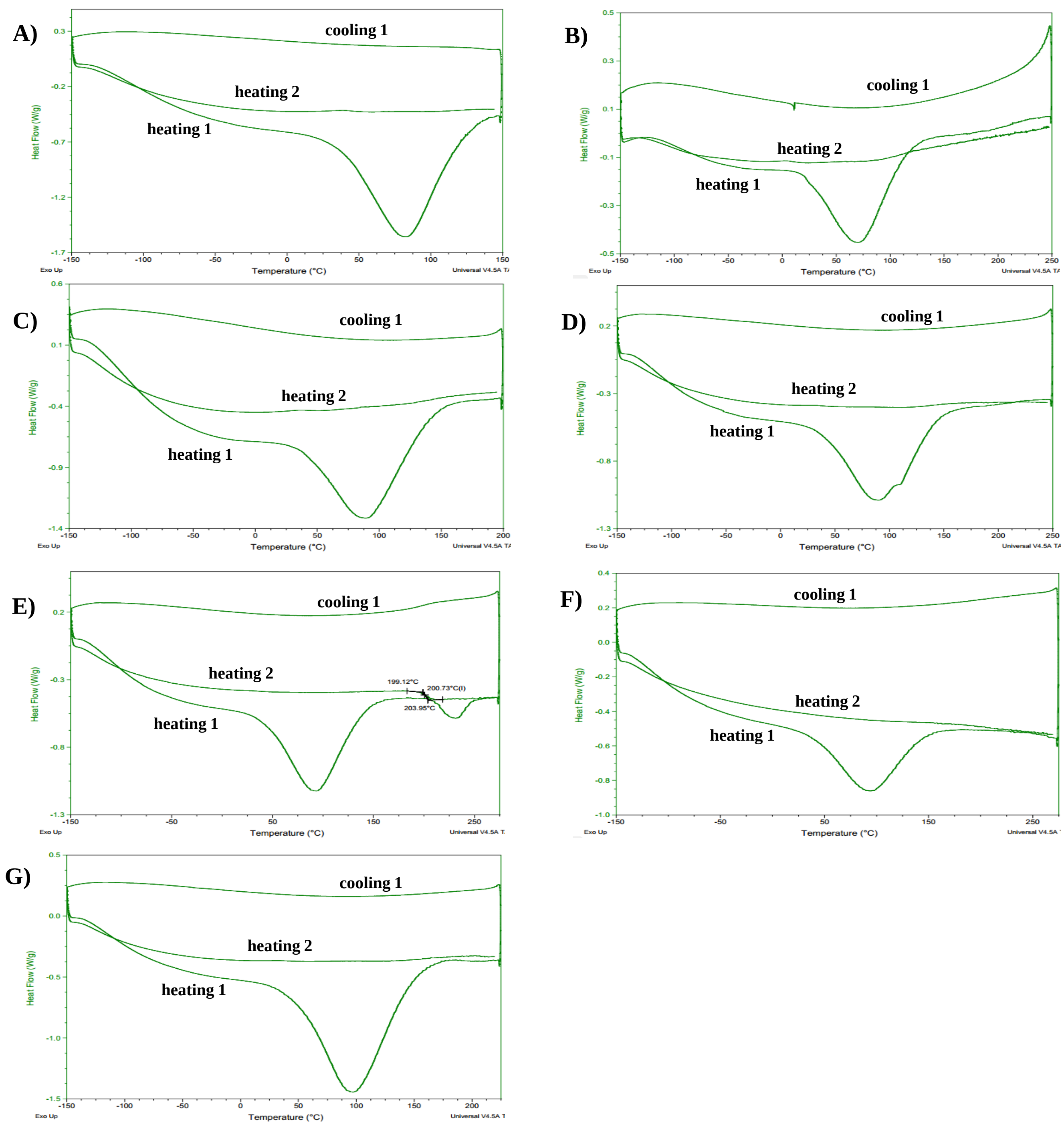

Figure **S18**. DSC of **LX** polymers: **LX1** (A), **LX2** (B), **LX3** (C), **LX4** (D), **LX5** (E), **LX8** (F) and **LXPh** (G).

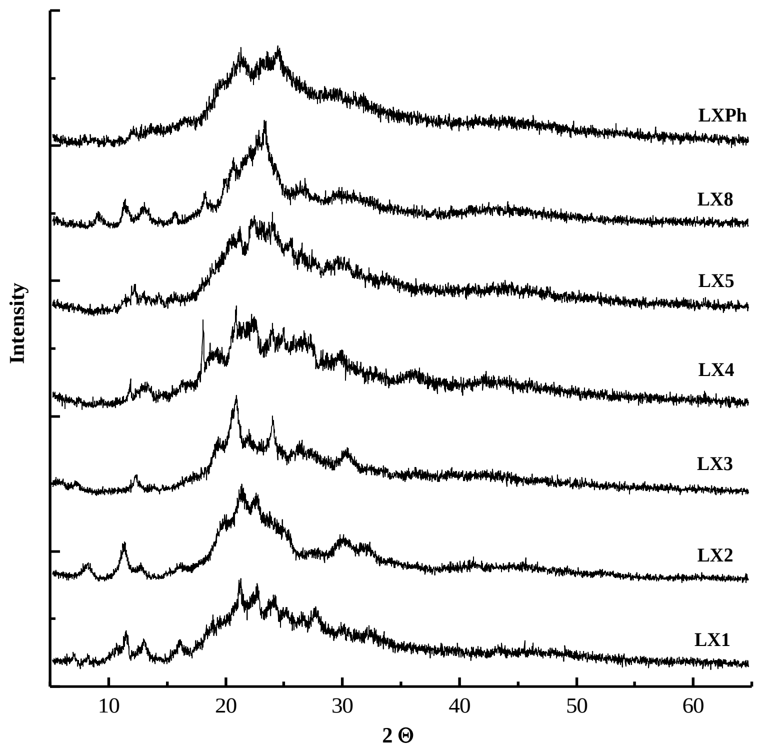

Figure **S19**. X-ray Powder Diffraction of polymers.

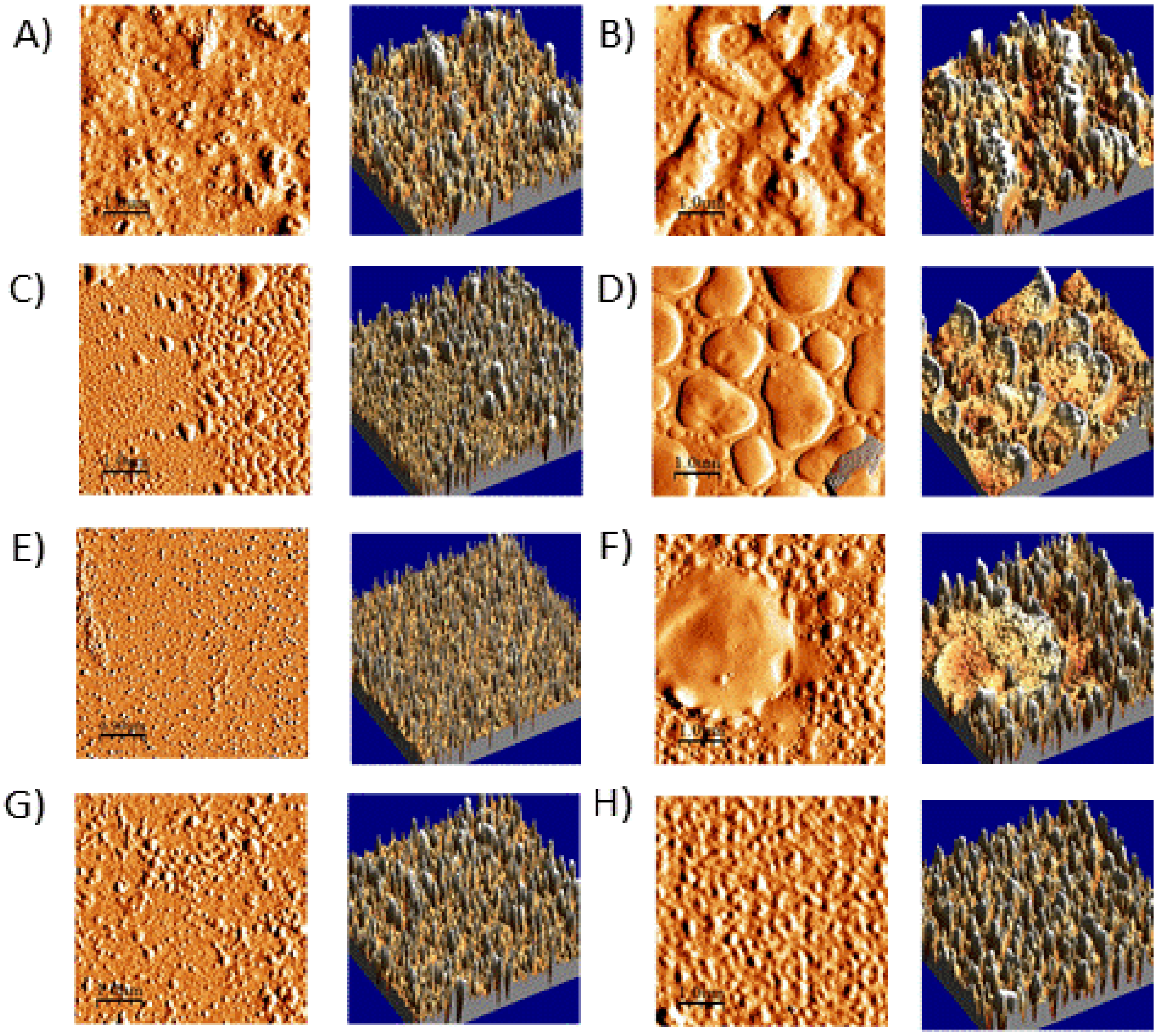

Figure **S20.** AFM (5×5 µm) 2D height images and 3D images of LbL films of **LX** with **Pc12-100**: **LX1/Pc12-100** (A), **LX2/Pc12-100** (B), **LX3/Pc12-100** (C), **LX4/Pc12-100** (D), **LX5/Pc12-100** (E), **LX8/Pc12-100** (F) and **LXPh/Pc12-100** (G) and clean glass slide (H).

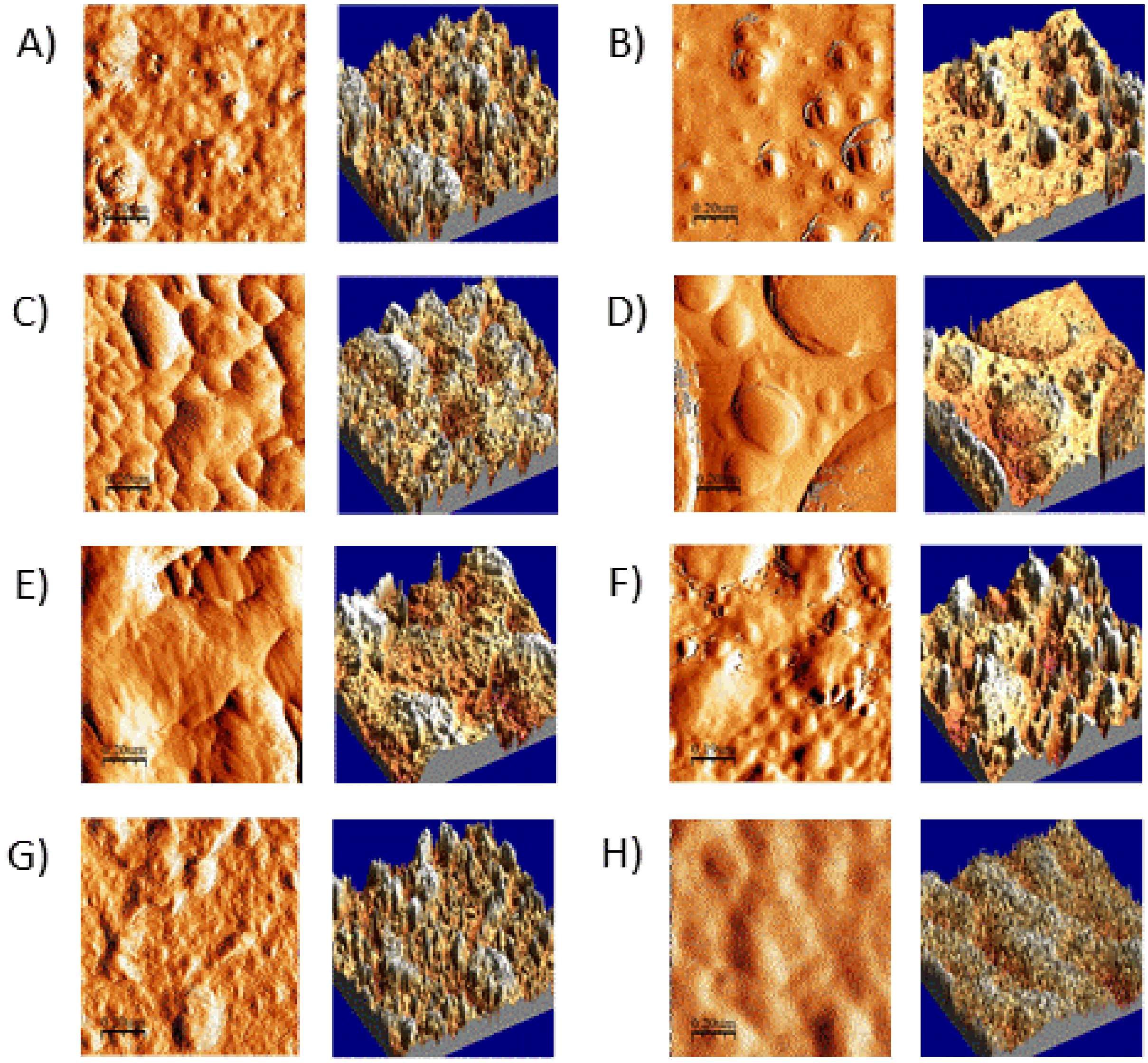

Figure **21.** AFM (1×1 µm) 2D height images and 3D images of LbL films of **LX** with **Pc12-100**: **LX1/Pc12-100** (A), **LX2/Pc12-100** (B), **LX3/Pc12-100** (C), **LX4/Pc12-100** (D), **LX5/Pc12-100** (E), **LX8/Pc12-100** (F) and **LXPh/Pc12-100** (G) and clean glass slide (H).