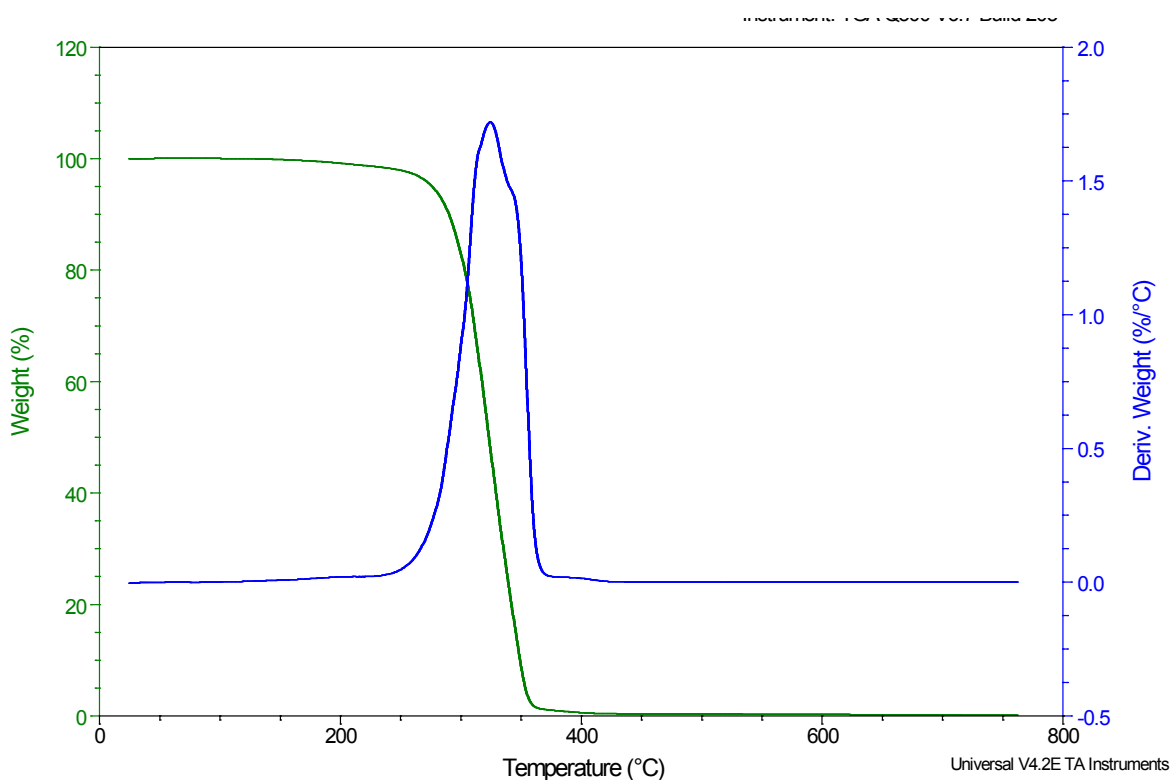


Synthesis procedure and ^1H NMR (CDCl_3) and ^{13}C NMR (CDCl_3)

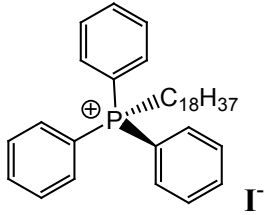
Octadecyltriphenylphosphonium iodide (C18P I). White solid, Yield = 90%, m.p. = 86 °C, T_g = 11 °C. ^1H NMR (CDCl_3): δ 0.80-0.90 (m, 3H, CH_3); 1.10-1.35 (m, 28, CH_2Me); 1.50-1.70 [m, 4H, $\text{PCH}_2(\text{CH}_2)_2$]; 3.50-3.70 (m, 2H, PCH_2); 7.70-7.90 (m, 15H, H arom). ^{13}C NMR (CDCl_3): δ 14.00 (CH_3); 22.67 (CH_2Me); 23.20; 29.37-29.66; 30.24; 31.85 (PCH_2); 118.45; 130.43; 133.70; 135.15 (P-Carom.).

Thermogravimetric analysis (TGA)

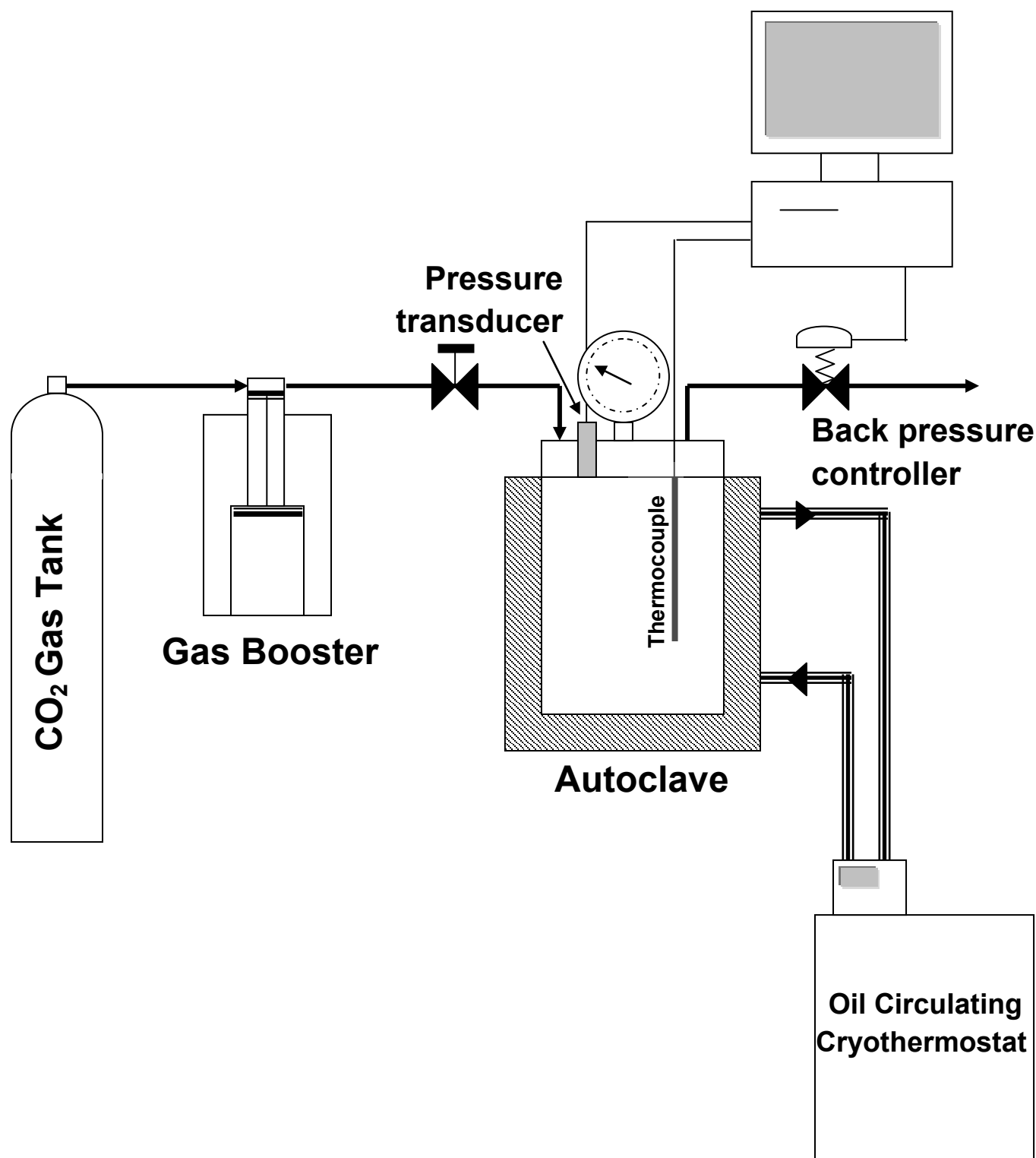
Figure 1 – Weight loss and weight loss derivative as a function of temperature (TGA, DTG) of the phosphonium ionic liquid $\text{C}_{18}\text{P I}^-$ (heating rate : 20 $\text{K}\cdot\text{min}^{-1}$, under nitrogen atmosphere).



Differential scanning calorimetry (DSC)

Nomenclature	structure	Melting Temperature (m.p)/ Glass transition (Tg)/Cristallization Temperature (Tc) (°C)
Octadecyltriphenylphosphonium iodide C₁₈P I		m.p. = 86 Tg = 11 Tc=75

ScCO₂ system synthesis



Fluorinated-functionalized alumina (Al-TES)

With ScCO₂ and IL :

Thermogravimetric analysis (TGA)

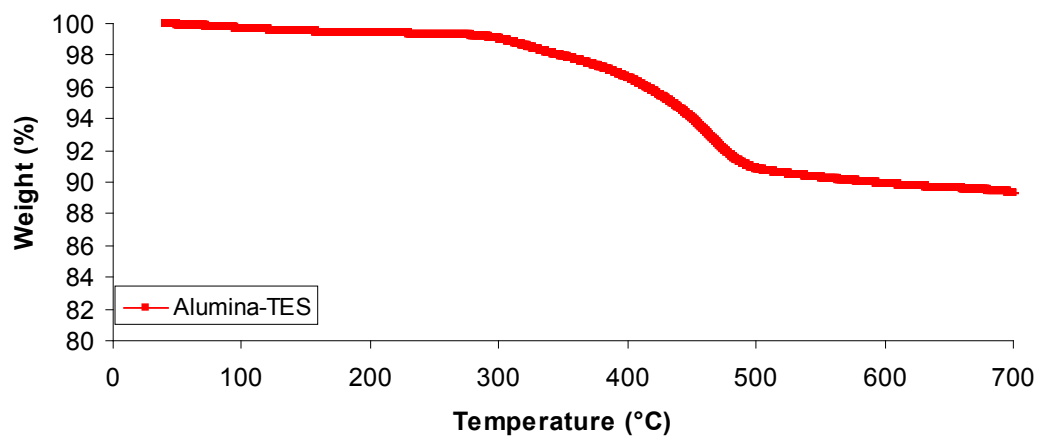


Figure 2 – Weight loss as a function of temperature (TGA) of the Alumina-TES (heating rate : 20 K.min⁻¹, under nitrogen atmosphere).

²⁹Si NMR spectra (with high-power ¹H decoupling and with cross-polarisation)

SL01 ; ^{29}Si CP/MAS spectrum @ 12000 Hz

