



Supplementary Materials

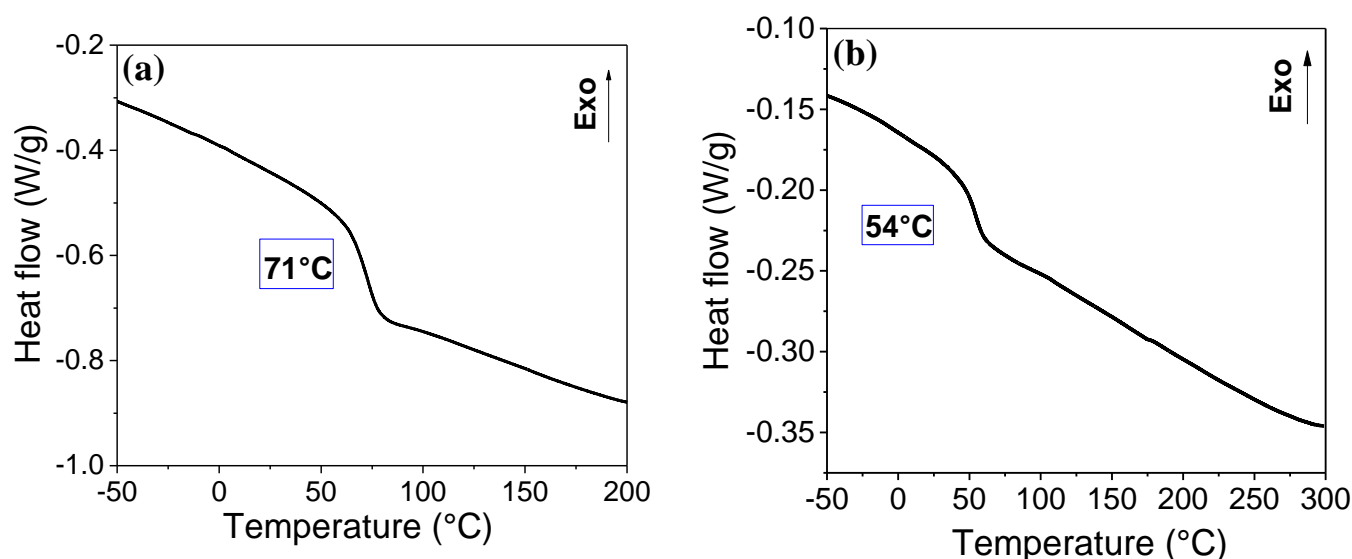
# New Epoxy Thermosets Organic-Inorganic Hybrid Nanomaterials Derived from Imidazolium Ionic Liquid Monomers and POSS<sup>®</sup>Ph

Houssém Chabane <sup>1,2</sup>, Sébastien Livi <sup>1</sup>, Jannick Duchet-Rumeau <sup>1</sup> and Jean-François Gérard <sup>1,\*</sup>

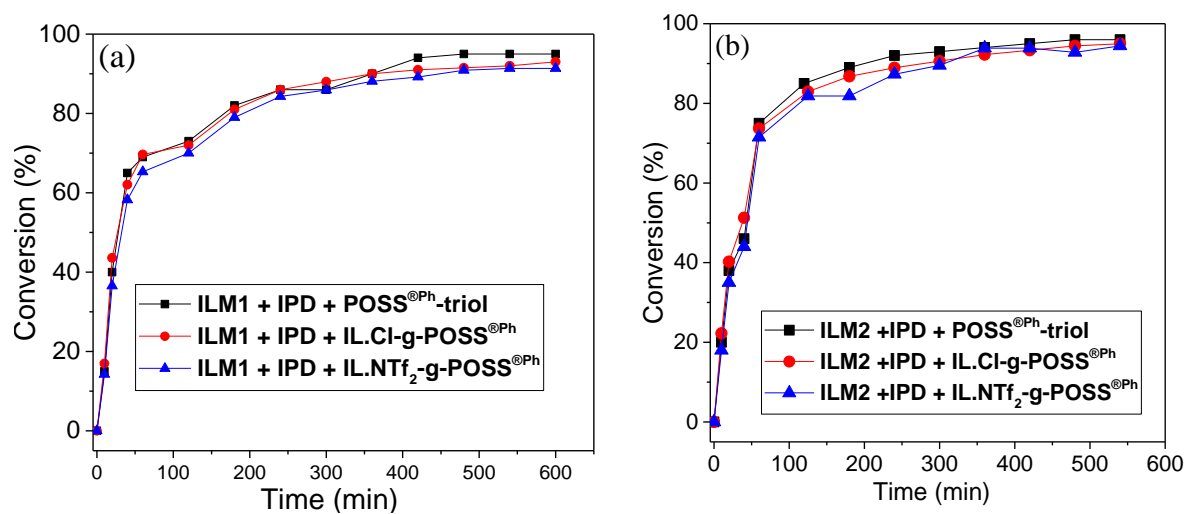
<sup>1</sup> Univ Lyon, CNRS, UMR 5223, Ingénierie des Matériaux Polymères, Université Claude Bernard Lyon 1, INSA Lyon, Université Jean Monnet, F-69621 France Cédex, France; houssem.chabane@insa-lyon.fr (H.C.); sebastien.livi@insa-lyon.fr (S.L.); jannick.duchet@insa-lyon.fr (J.D.-R.)

<sup>2</sup> Laboratoire de Chimie Macromoléculaire, Ecole Militaire Polytechnique, BP 17, Bordj El-Bahri, 16111 Algiers, Algeria

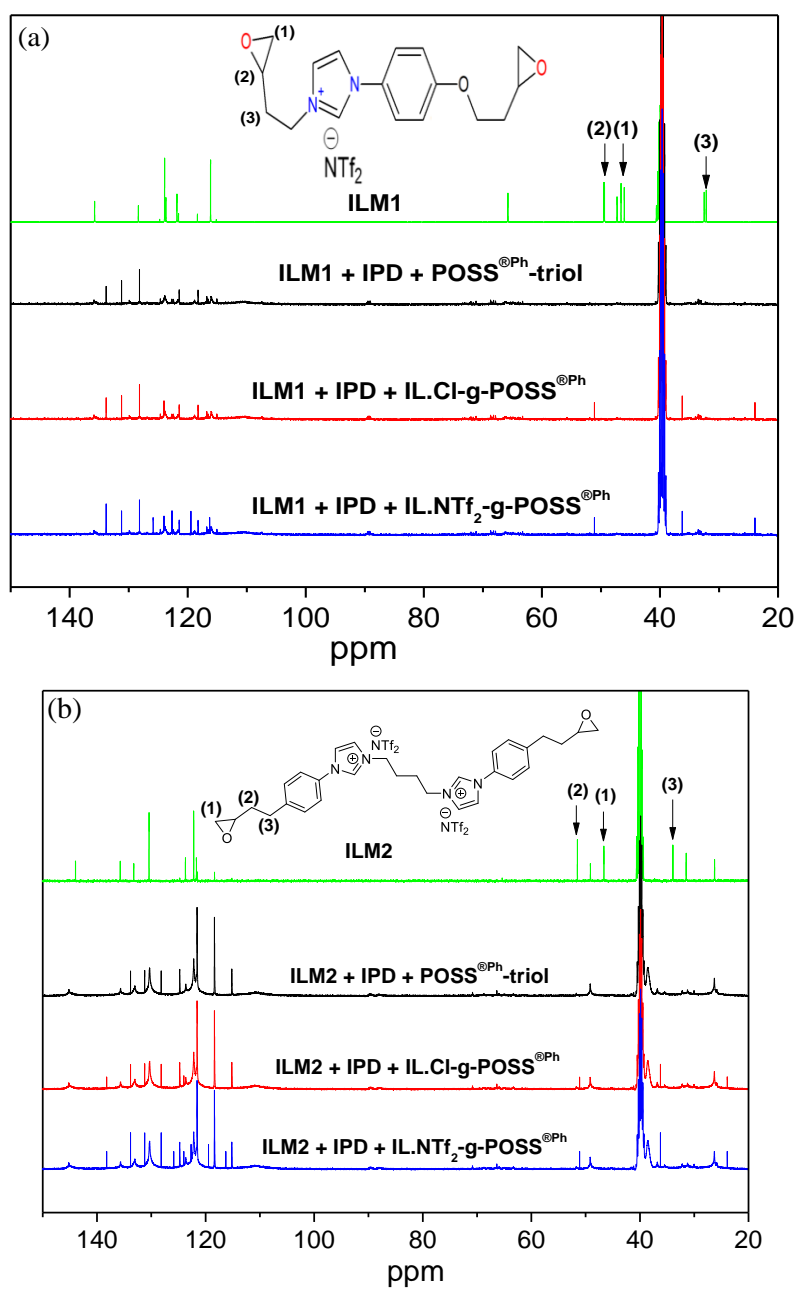
\* Correspondence: jean-francois.gerard@insa-lyon.fr; Tel.: + 33 04 72 43 60 04 (J.F.G.); + 33 06 05 52 32 29 (H.C.)



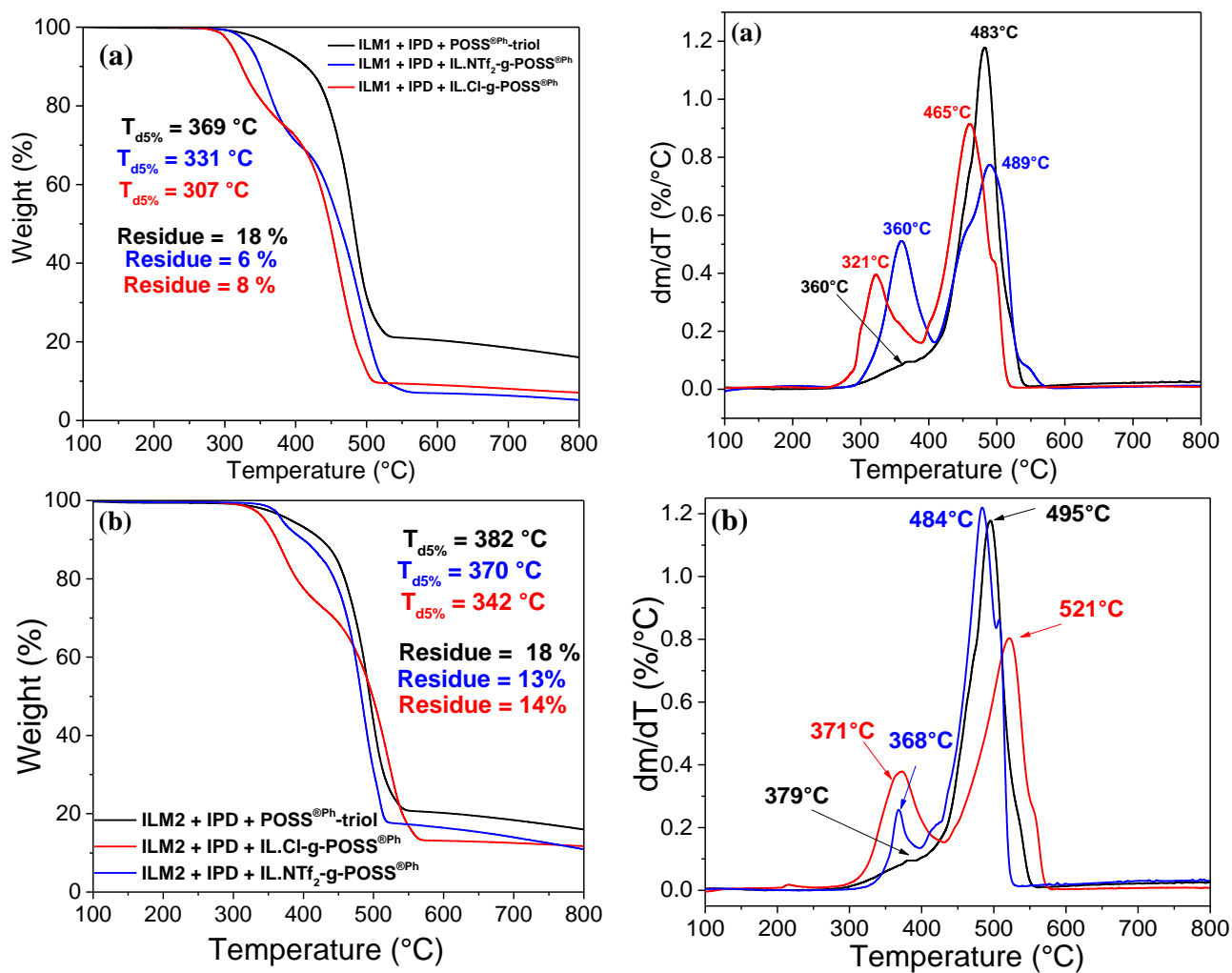
**Figure S1.** DSC thermograms after curing of (a) ILM1/IPD and (b) ILM2/IPD.



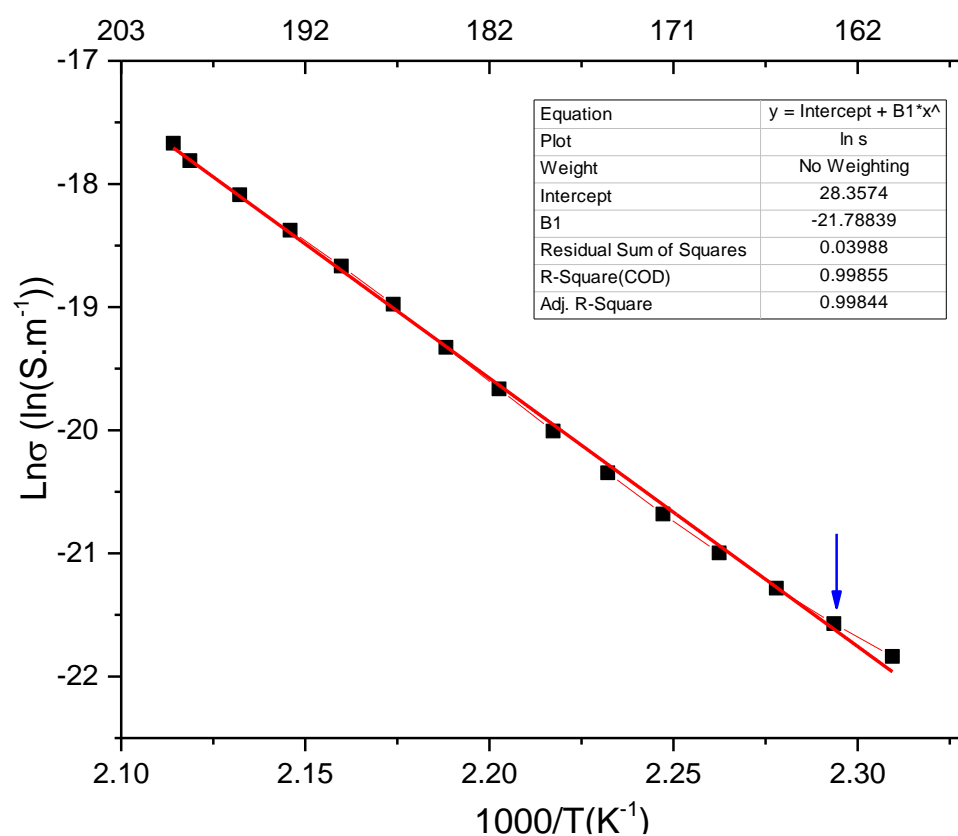
**Figure S2.** Epoxy group conversion as a function of the reaction time and during temperature steps from FT-IR for the epoxy O/I hybrid networks containing POSS<sup>Ph</sup>-triol, IL.Cl-g-POSS<sup>Ph</sup> and IL.NTf<sub>2</sub>-g-POSS<sup>Ph</sup> respectively, prepared based on epoxy ionic liquids monomers: (a) ILM1, and (b) ILM2.



**Figure S3.** HR-MAS  $^{13}\text{C}$ -NMR spectrum of the epoxy O/I hybrid networks containing POSS<sup>®</sup>Ph-triol, IL.Cl-g-POSS<sup>®</sup>Ph and IL.NTf<sub>2</sub>-g-POSS<sup>®</sup>Ph respectively, prepared based on epoxy ionic liquids monomers: (a) ILM1, and (b) ILM2 (DMSO-d<sub>6</sub>; 400 MHz).



**Figure S4.** Evolution of weight loss as a function of the temperature (TGA) and derivative of TGA curves (DTG) for the epoxy hybrid O/I networks containing POSS<sup>®</sup>Ph-triol, IL.Cl-g-POSS<sup>®</sup>Ph and IL.NTf<sub>2</sub>-g-POSS<sup>®</sup>Ph respectively, prepared based on epoxy monomers: (a) ILM1, and (b) ILM2.



**Figure S5.** Dependence of DC conductivity with temperature (extrapolated from AC conductivity values at 0.1 Hz for DGEBA/IPD network). Solid red line represents a regression to the Arrhenius equation.