Multifunctional Porous Aramids (Aerogels) by Efficient Reaction of Carboxylic Acids and Isocyanates

Nicholas Leventis[*,1], Chakkaravarthy Chidambareswarapattar[1], Dhairyashil P. Mohite[1], Zachary J. Larimore[2], Hongbing Lu[*,3] and Chariklia Sotiriou-Leventis[*,1]

1. Department of Chemistry, Missouri University of Science and Technology, Rolla, MO 65409, USA, e-mail: leventis@mst.edu, cslevent@mst.edu

2. Department of Mechanical Engineering, Missouri University of Science and Technology, Rolla, MO 65409, USA

3. Department of Mechanical Engineering, The University of Texas at Dallas, Richardson, TX 75080, USA, e-mail: hongbing.lu@utdallas.edu

Electronic Supplementary Information

Figure S.1 (A) Solid state ^{13}C NMR spectrum of a polyamide aerogel prepared from trimesic acid and tris(4-isocyanatophenyl)methane using 15% w/w solids in DMF. (B) Liquid ^{13}C NMR spectrum of trimesic acid. (C) Liquid ^{13}C NMR spectrum of tris(4-isocyanatophenyl)methane.

Figure S.2 X-ray diffraction (XRD) data of polyamide aerogels prepared in DMF from trimesic acid and tris(4-isocyanatophenyl)methane using various solids formulations.

Table S.1 Heat capacities of standard samples at 23 ^{o}C run at the heating rates indicated.

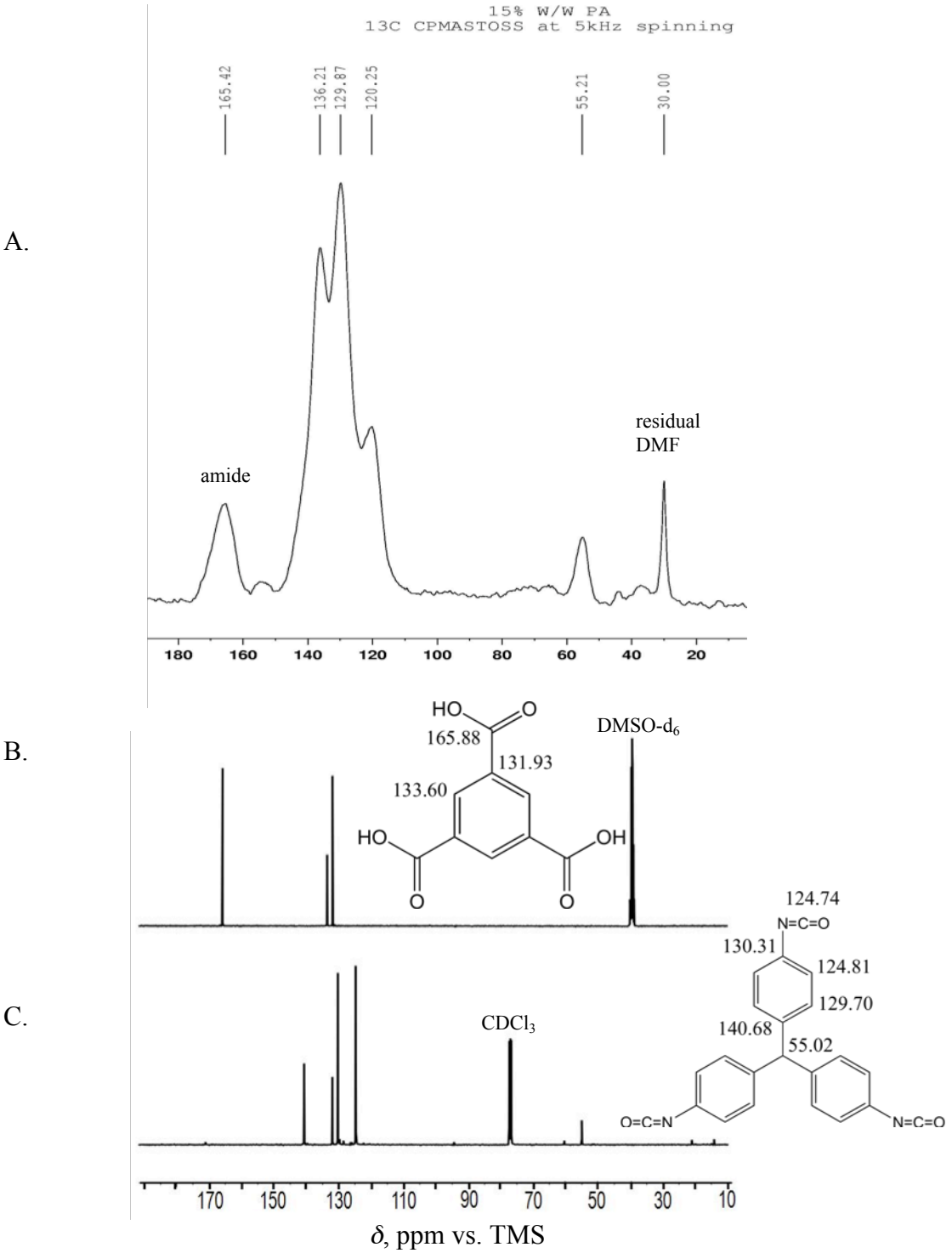

Figure S.1 (A) Solid state ^{13}C NMR spectrum of a polyamide aerogel prepared from trimesic acid and tris(4-isocyanatophenyl)methane using 15% w/w solids in DMF. (B) Liquid ^{13}C NMR spectrum of trimesic acid. (C) Liquid ^{13}C NMR spectrum of tris(4-isocyanatophenyl)methane. (Product is supplied as an ethylacetate solution, hence the residual peaks above baseline.)

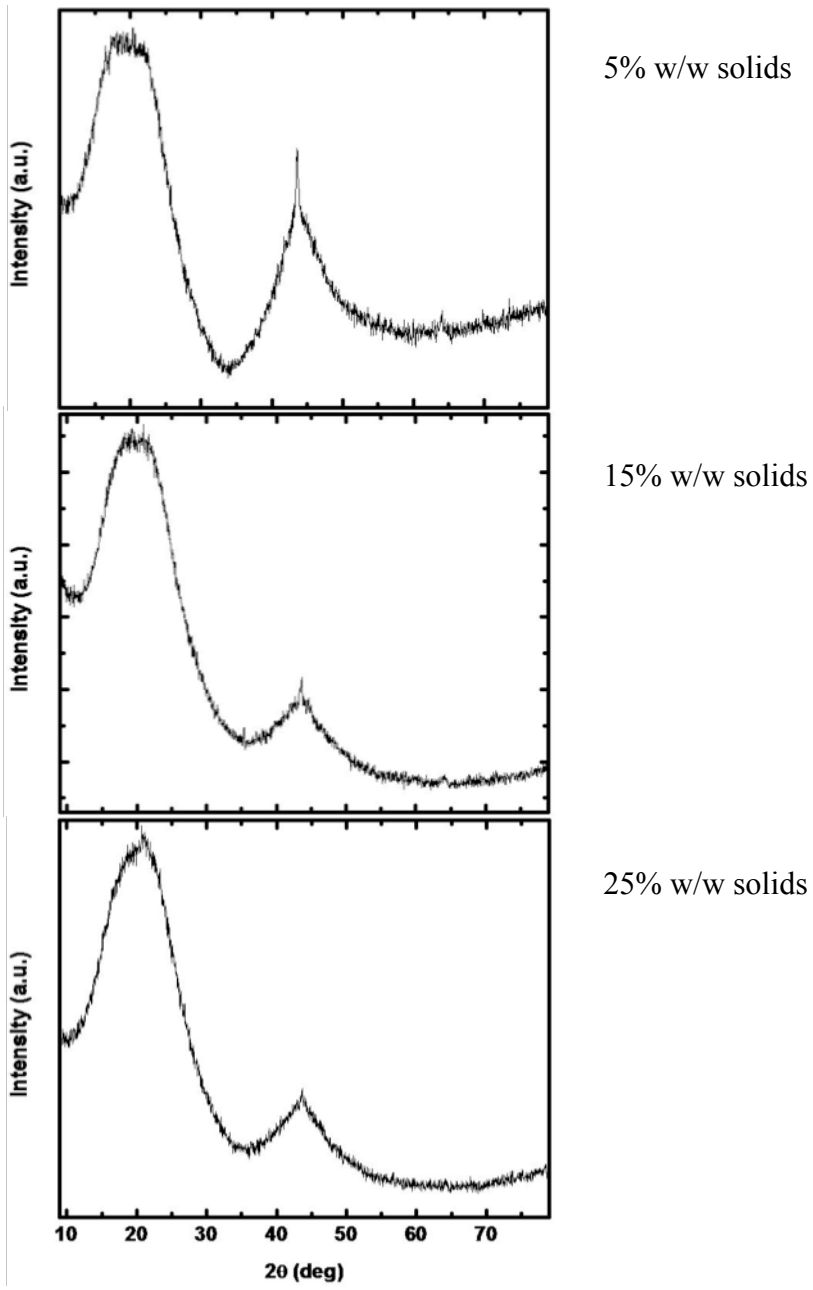

Figure S.2 X-ray diffraction (XRD) data of polyamide aerogels prepared in DMF from trimesic acid and tris(4-isocyanatophenyl)methane using various solids formulations. Degrees of crystallinity calculated from the integrated peak intensity above the broad background.

Table S.1 Heat capacities of standard samples at 23 °C run at the heating rates indicated.

	Observed [J g^{-1} K^{-1}]	Literature Value [J g^{-1} K^{-1}]	ratio [Lit./Obs.]
Rutile (TiO_2 at 0.5 °C min^{-1})	0.770	0.711	0.92
Rutile (TiO_2 at 2 °C min^{-1})	0.770	0.711	0.92
KCl (at 2 °C min^{-1})	0.746	0.695	0.93
Aluminum (at 0.5 °C min^{-1})	0.941	0.91	0.97
Graphite (at 2 °C min^{-1})	0.805	0.72	0.89
Corundum (Al_2O_3 at 2 °C min^{-1})	0.857	0.775	0.90
		Average:	0.92
		Standard Deviation:	0.02_8