Electronic Supplementary Information for:

Conductivity of ionic liquid-derived polymers with internal gold nanoparticle conduits

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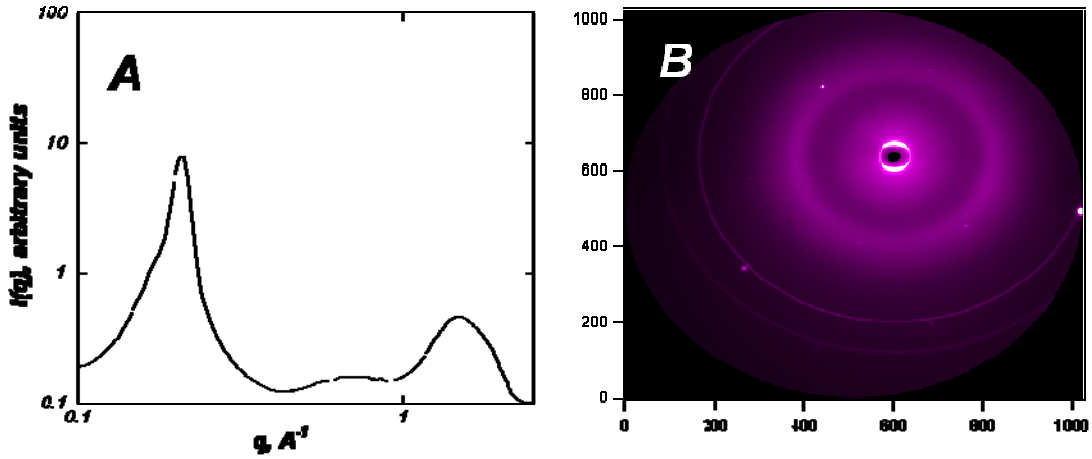

Figure 1S. X-ray scattering data collected on a photopolymerized binary mixture of $[C_{10}VIm^{+}][Cl^{-}]$ with an aqueous solution of 15 % (w/w) $AuCl_4^-$ (Au^{3+} content was 0.58 μmoles), (A) Azimuthally integrated 1-D. (B) 2-D pattern collected with the cylindrically shaped sample oriented with the long axis perpendicular to incident beam.

Table 1S. Fit parameters determined for EIS data in Figure 3B to the equivalent circuit represented in Figure 3A.

$[Au^{3+}]$ μmoles	R (% error)	C1 (% error)	CPE-T (% error)	CPE-P (% error)
0	7.99×10^{6} (3.6)	9.30×10^{-12} (3.4)	1.06×10^{-8} (15.5)	0.59 (2.9)
0.175±0.045	7.18×10^{6} (3.8)	9.52×10^{-12} (3.5)	8.10×10^{-9} (13.6)	0.60 (2.7)
0.60±0.050	4.96×10^{5} (4.9)	1.13×10^{-11} (5.6)	3.94×10^{-8} (10.5)	0.52 (3.2)
1.58±0.065	8.23×10^{4} (3.8)	9.69×10^{-12} (5.2)	3.99×10^{-8} (9.3)	0.61 (2.3)

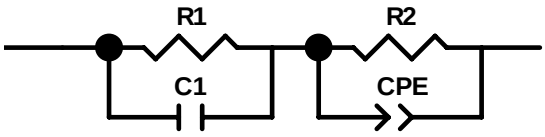

Figure 2S. The equivalent circuit used in analysis of EIS data presented in Figure 6.

Table 2S. Fit parameters determined for EIS data in Figure 6 to the equivalent circuit represented in Figure 2S.

$[Au^{3+}]$ µmoles	R1 (% error)	C1 (% error)	CPE-T (% error)	CPE-P (% error)	R2 (%error)
1.58±0.065	$1.80x10^{6}$ (0.6)	$4.84x10^{-12}$ (1.3)	$2.48x10^{-8}$ (1.3)	0.71 (0.6)	$5.37x10^{7}$ (1.3)