RSC Advances

Supplementary Information

Intercalation behaviour of magnesium into natural graphite using organic electrolyte systems

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Results and discussion

Conductivity and viscosity measurement

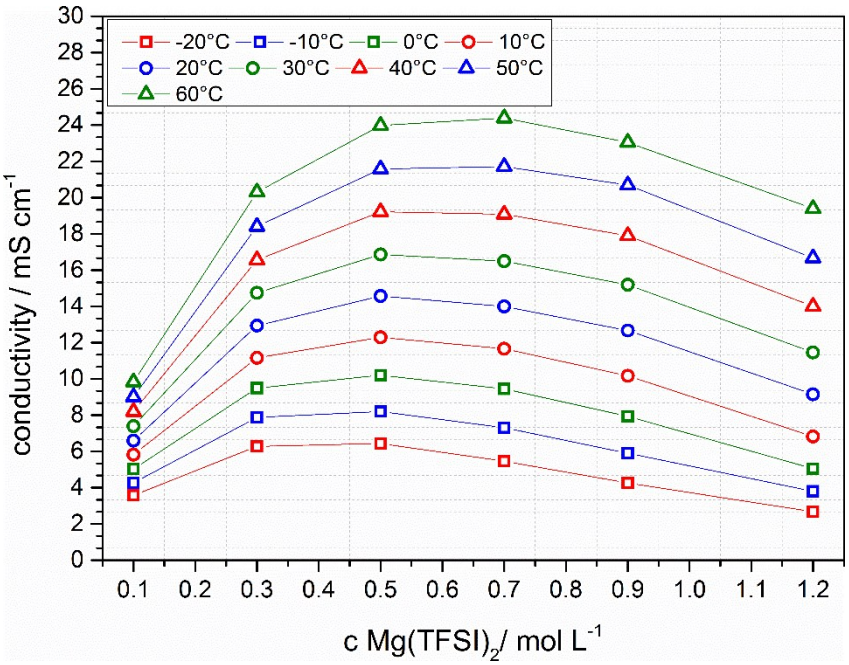

Figure S1: Conductivity measurement for different $Mg(TFSI)_2$-salt concentrations in DMF at temperatures from -20°C to +60°C showing a conductivity maximum for the electrolyte 0.5 M $Mg(TFSI)_2$/DMF at all temperatures.

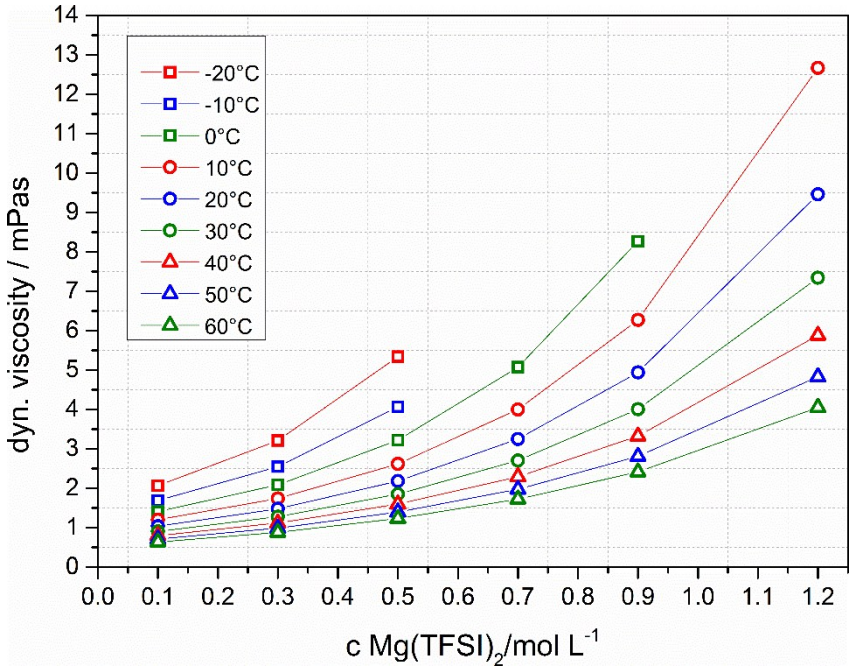

Figure S2: Viscosity measurement for different $Mg(TFSI)_2$-salt concentrations in DMF at temperatures from -20°C to +60°C showing a conductivity maximum for the electrolyte 0.5 M $Mg(TFSI)_2$/DMF at all temperatures.

Electrochemical experiments

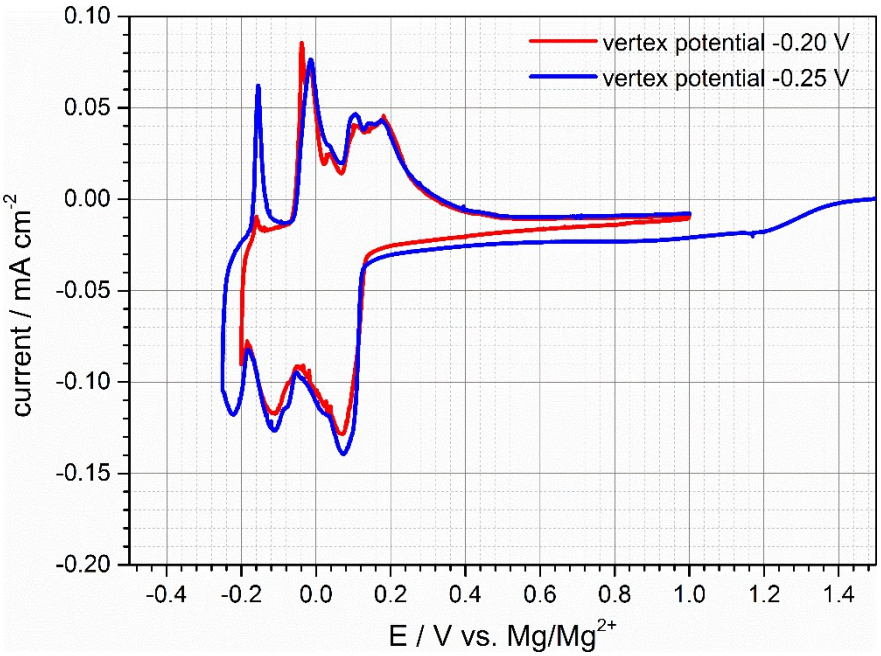

Figure S3: Cyclic voltammogram of a natural graphite electrode with 0.5 M $Mg(TFSI)_2$/DMF electrolyte at different vertex potentials: -0.2 V and -0.25 V vs. Mg/Mg^{2+}.

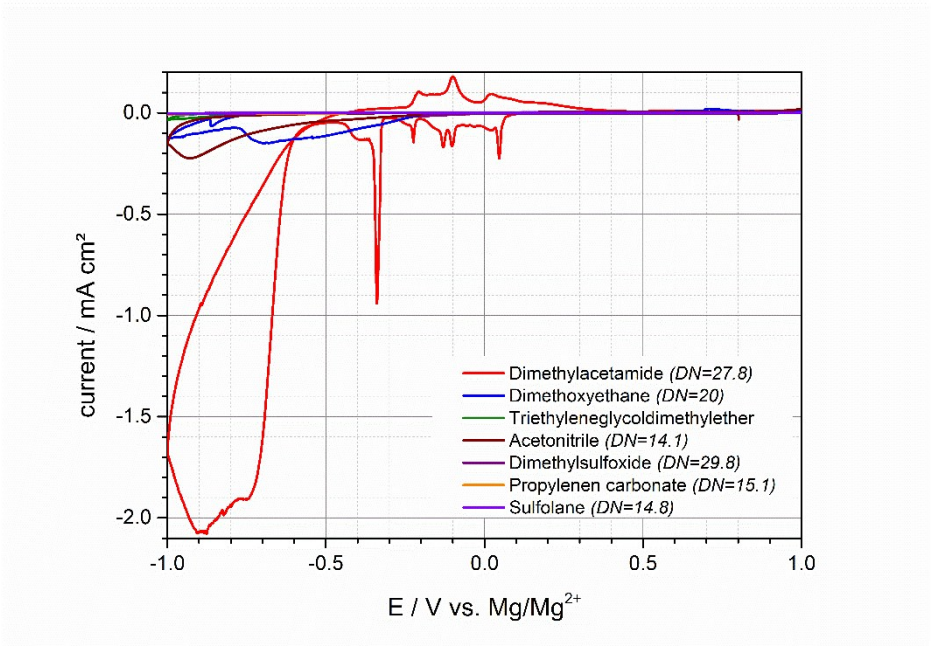

Figure S 4: Cyclic voltammogram of a natural graphite electrode with 0.5 M $Mg(TFSI)_2$/Dimethylacetamide, 0.5 M $Mg(TFSI)_2$/Dimethoxyethane, 0.5 M $Mg(TFSI)_2$/Triethyleneglycoldimethylether, 0.5 M $Mg(TFSI)_2$/Dimethylsulfoxid, 0.5 M $Mg(TFSI)_2$/Propylenecarbonate, 0.5 M $Mg(TFSI)_2$/DMA, 0.5 M $Mg(TFSI)_2$/Sulfolane electrolyte at scan rate of 0.05 $mV \cdot s^{-1}$.