Structure of Fluids In Mesoporous Carbon

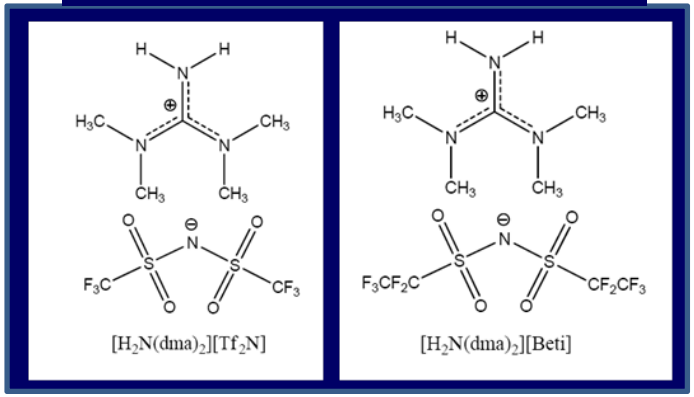
***Science Challenge*: How are fluid structures altered at nanotextured substrates as a function of fluid type, substrate chemistry and structure, and charge-discharge cycling?**

***Goal:* Provide quantitative characterization of ionic liquids interacting with carbon substrates**

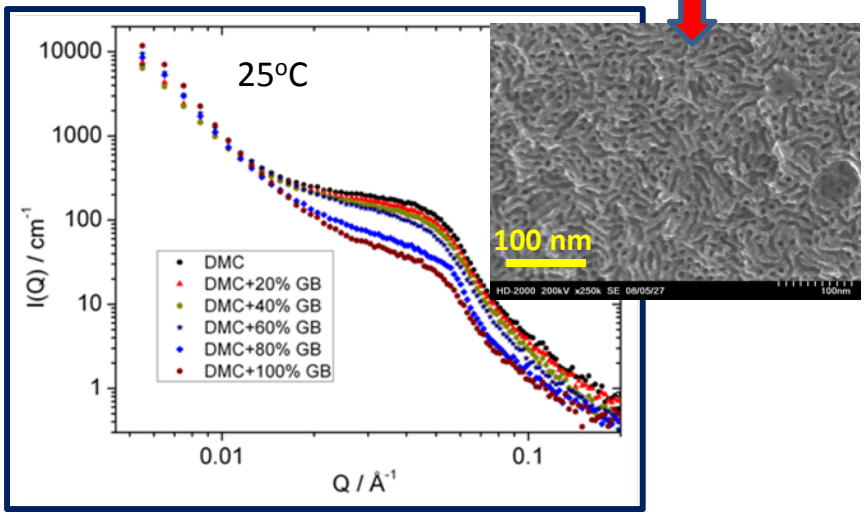
***Significance*: A fundamental understanding of the structure and dynamics of fluids at carbon surfaces will help build and validate molecular models leading to a predictive capability for design of new energy devices**

***Approach*: Interaction of room temperature ionic liquids (RTIL) at different pore loadings in novel mesoporous carbons interrogated by Small Angle Neutron Scattering (SANS).**

Example RTILs used in experiments

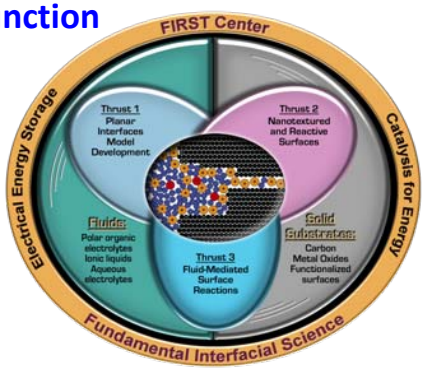


SANS – $H_2N(dma)_2$[Beti] - (GB) in disordered mesoporous carbon (DMC)



SANS curves obtained at the Los Alamos LANSCE neutron source show strong modulations in the scattering patterns as a function of the degree of pore filling (shown as %)

Data analysis will reveal the density and volume of confined RTILs as a function of the extent of pore filling.



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