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## Ionic liquids with/without small water content confined in porous glasses

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The structure and dynamics of the ionic liquid 1-ethyl-3-methylimidazolium acetate (EMIMAc) in porous glass with pores of the size 40 and 100 Å is determined in comparison to the bulk liquid [1]. We employed x-ray diffraction to measure the domain structure, and neutron backscattering for the dynamics. In confinement, the liquid displays onion-like domain structuring while in bulk the liquid is largely forming a bicontinuous structure similar to microemulsions. This also has an effect on the dynamics of the liquid at high temperatures (373K): The ions in the bulk can diffuse along the domain boundaries while they need to cross the domains in the ordered state in confinement. At low temperatures, the attractive forces of all ions are such strong –we have a highly viscous fluid –such that the diffusion in any direction is similarly slow, and the exact domain structure does not affect the diffusion mechanism. The addition of ½ mol/mol water slightly increases the correlation length and accelerates the dynamics while the water and acetate seem to be rather tightly bound to each other.

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