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Ionic liquids in bulk and under 1D CNT nanometric confinement. A multiscale study.

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We address the physics of Ionic Liquids charged with lithium salts under confinement in a carbon nanotube (CNT) based membrane. In bulk, we combine QENS, PFG-NMR and rheology to highlight a one order of magnitude difference of the transport quantities, depending whether they are inferred at the molecular or at the micrometric scale. We probe the same IL confined in the CNT membranes. Compared to the bulk situation, we show a conductivity gain as high as one order of magnitude. A patent is filed.

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