

## Modeling the Dynamic Viscosity of Highly Polar Fluids Via the Use of Density Scaling

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Casalini and Roland [*Phys. Rev. E* **69**, 062501 (2004); *J. Non-Cryst. Solids* **353**, 3936 (2007)] have effectively proven that both the dielectric relaxation times and the viscosity of liquids can be graphically represented into a single master curve as a function of the thermodynamic potential ( $T \rho^{-\gamma}$ ), where  $T$  is the temperature,  $\rho$  is the molar density, and  $\gamma$  is a state-independent scaling exponent. In this work, we applied the aforementioned thermodynamic scaling to the dynamic viscosity of highly polar and associating fluids such as water, alcohols, H<sub>2</sub>S, etc. Unlike previous studies on density scaling of transport properties, a more suitable normalization of the dynamic viscosity was used in this work in order to obtain improved correlations of viscosity over much wider temperature and pressure ranges encompassing the zero-density limit, the high-density region, the gas-liquid saturated line and the vicinity of the critical point. A calculation procedure is also described here to optimize the value of the scaling exponent  $\gamma$  that ensures the best superpositioning of all experimental isotherms considered.