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Liquid fragility as a important quantity describing the dynamic behavior of glass-forming liquids in different thermodynamic conditions

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The molecular studies of glass-forming liquids at elevated pressure become now a standard practice in many laboratories all over the world [1]. The addition of pressure as an external thermodynamic variable opens a new perspective in understanding the fragility concept. The objective of this presentation is to show that the relaxation dynamics of van der Waals liquids, polymers and ionic liquids exhibit a uniform pattern of behavior when it is analyzed in terms of fragility concept. Consequently, general rules defining the behavior of isobaric, isothermal and isochoric fragilities are formulated for these three groups of materials [2]. Our findings are consistent with the density scaling concept. Finally, it is experimentally proved that both isothermal and isobaric fragilities are new isomorphic quantities in the power law density scaling regime.

[1] G. Floudas, M. Paluch, A. Grzybowski, and K. Ngai, *Molecular Dynamics of Glass-Forming Systems: Effects of Pressure*, Chap. 2, Springer-Verlag Berlin Heidelberg 2011.

[2] M. Paluch, E. Masiewicz, A. Grzybowski, S. Pawlus, J. Pionteck, and Z. Wojnarowska, *J. Chem. Phys.* **141**, 134507 (2014).

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