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Toward a Better Understanding of Dielectric Responses of van der Waals Liquids: The Role of Chemical Structures

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In this presentation we will show results of broadband dielectric spectroscopy studies performed to analyze the effect of changes in molecular architecture on the behavior of molecular dynamic in both supercooled liquid and glassy states. For this purpose we investigated a family of van der Waals liquids which are systematic modifications of the canonical glass-former i.e. propylene carbonate. Our dielectric spectroscopy measurements of several propylene carbonate derivatives were performed in a wide range of temperatures under ambient and elevated pressure. We will demonstrate that even slight changes in chemical structure of studied glass-forming liquids can have significant influence on such parameters as: glass transition temperature, fragility, distribution of relaxation times, and etc. Finally, our experimental results constitute a new evidence for validity of correlation between dielectric strength and the frequency dispersion of the dielectric response of the structural relaxation process recently reported in *Phys. Rev. Lett.*, 2016, 116, 025702.