**From nano to single polymer chain: a chemist perspective of the glass transition**

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Among the physical properties of polymers, the glass transition is certainly the one that raises a lot of questions. This transition, which delimits two completely different domains of study while preserving the amorphous character, takes place over a few nanoseconds to a few years (ageing). With the molecular simulation, a new way of study has been opened. It has become a full-fledged technique in the field of research located between experiment and theory. Applied to the study of the glass transition, it is an interesting source of development because if the values of $T_g$ (glass transition temperature) are consistent with the experiment, it is possible to unveil its molecular origins. It can then lead to a chemical interpretation of this change. However, it also leads to other questions. For instance, what exactly is the glass transition? Where is it located? Does a glass transition associated with a single chain exist? This presentation is aimed at providing some answers to these questions by suggesting a chemical perspective of this tricky transition.