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Promoting Glass-forming Ability in Triazine-based Molecular Glasses AUDREY LAVENTURE, University of Montreal, ARMAND SOLDERA, University of Sherbrooke, OLIVIER LEBEL, Royal Military College of Canada, CHRISTIAN PELLERIN, University of Montreal — Creating glasses from small molecules, known as molecular glasses, can be quite challenging. Special processes, such as deep quenching, are often necessary to generate an amorphous phase, which tends to revert to its crystalline state over time. An easier preparation of molecular glasses thus requires the development of design strategies that frustrate crystallization. Recent work by Lebel and coworkers has shown that aminotriazine-based molecules can present an outstanding glass-forming ability due to their poor packing in self-assembled aggregates held together by multiple hydrogen bonds [Plante et al. J. Phys. Chem. B, 2009, 14884]. Herein, we present a systematic study of these triazine derivatives. Compounds were first classified into different levels according to their critical cooling rate (Rc) determined by differential scanning calorimetry. The influence of the substituent structure and position on the glass-forming ability (GFA), glass stability (GS) and glass transition temperature (Tg) was then studied. This work helped us identify general trends about the structural features that enable small molecules to form long-lived glasses.

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