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Glass-formers vs. Assemblers

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In most instances, the formation of a glass signifies an inability of the constituents of a system to self-organize into a well-defined, thermodynamically preferred ordered structure. Thus good "assemblers" may make poor glass-formers, and good glass-formers tend to be poor assemblers. How good or bad a system is in assembling or vitrifying/jamming depends on many features of the constituent building blocks, including shape and interactions. In many cases, building blocks whose shapes make them good glass-formers can, through almost imperceptible perturbations, become good assemblers, and vice versa. We examine these issues through consideration of several model systems, including colloidal "rocks" and foldable nets.
*with E.R. Chen, P. Damasceno, P. Dodd, M. Engel, A.S. Keys, D. Klotsa, E. Teich, and G. van Anders