

Molecular Random Tilings

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ABSTRACT

I will describe recent theoretical/experimental work on molecular networks of surface adsorbed small organic molecules. For certain experimental conditions these networks self-assemble into two-dimensional random tilings, ideal aperiodic systems with long range topological correlations (and closely related to quasicrystals). These molecular networks are rare, if not unique, examples of molecular systems displaying so-called Coulomb phase behaviour and fractional excitations. Furthermore, these systems are dynamically arrested and present many similarities to glasses. I will also show how we can explore in these systems the predicted phase behaviour of interacting planar tilings and dimer coverings.