

Matthias Himmelmann (University of Potsdam): An Empirical Treatment of Disordered Minimal Surfaces

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Triply periodic minimal surfaces – especially the Primitive, Diamond and Gyroid – appear throughout nature. While traditionally, the focus has been on highly symmetric phases, recently attention has shifted towards disordered structures. For example, these surfaces manifest as intermediate phases, sponge phases, and materials such as amorphous silicon. In this work, we employ two distinct approaches – one geometric and one of topological nature – to computationally generate disordered minimal surfaces. By empirically comparing the resulting structures and examining key invariants such as curvature fluctuation and isotropy, we aim to enhance our understanding of these surfaces' quality in relation to ordered phases.