

Periodic structures beyond sphere packings: nets, knots, polycatenanes and weavings.

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Abstract

Early descriptions of crystal structures considered them as periodic arrays of points. For inorganic structures the description as sphere packings was particularly fruitful. A later development was the description in terms of *connected* points, i.e. as periodic graphs or *nets*. Later still the description of structures as interpenetrating nets (*interwoven* or *catenated*) became important. Finally structures have been recognized as based on interwoven threads or loops – generalized knots known as polycatenanes and weavings. In this talk I will give a summary of what we know about the geometry of such structures – particularly the most regular.