Stabilizations on polycontinuous patterns

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Abstract

Diblock copolymers are known to self-assemble to form a triply periodic structure called a bicontinuous pattern, typified by the double gyroid. A bicontinuous pattern is a structure in which a triply periodic thickened surface divides the 3-dimensional space into two regions. Furthermore, each region contains a net as a spine.

In this talk, I will introduce polycontinuous patterns, which generalize the concept of bicontinuous patterns. A polycontinuous pattern is a 2-dimensional polyhedron dividing space into multiple regions, each containing a net. I also introduce an operation called stabilization, which transforms a pattern into a more complex one, and show that patterns of the same type satisfy a relation called "stable equivalence."