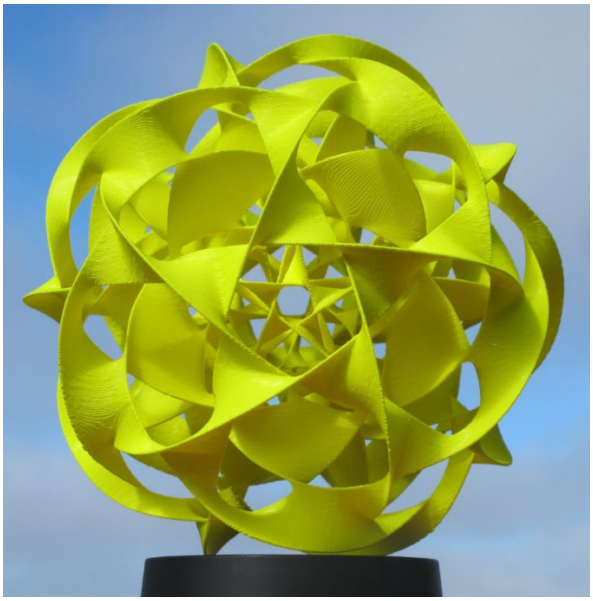
Soap-film Surfaces on Border Curves of High Symmetry

Carlo H. Séquin (2019): 3D-printed “minimal” surfaces; 7” diameter.

Classical “Star Cinder” bordered by 10 triangular loops with icosahedral symmetry.



3-level “Star Cinder” bordered by 30 circular rims, one each below each edge of an icosahedron.

Symmetrical tangles of simple loops or knots are defined as the border curves of a high-genus surfaces approximating the minimal surfaces of a soap-film surface spanning the given borders. I call them “Star Cinders” to honor Charles O. Perry who has created such a sculptural model spanning 10 interlinked loops with icosahedral symmetry. I expand this concept to more complex tangles of border curves that can support multiple nested levels of concentric shells or result in toroidal architectures.