CLAIMS

1. A structure comprising:

a membrane with tensile properties; and

a plurality of reciprocal patterning units disposed within the membrane, wherein each reciprocal patterning unit comprises a plurality of struts and wherein each of the plurality of struts is configured to provide tension forces in a plurality of opposing directions to an area of the membrane in each reciprocal patterning unit,

wherein the plurality of opposing directions comprises four or more opposing directions, and

wherein the area of the membrane in each reciprocal patterning unit comprises endpoints of the plurality of struts, and

wherein the endpoints of each of the plurality of struts are configured to define an area corresponding to a polygon comprising three or more edges, and

wherein the membrane exerts compression forces on each of the plurality of struts, and

wherein each of the plurality of struts exerts the tension forces on the membrane simultaneously to maintain structural integrity of the structure.

2. The structure as claimed in any one of the preceding claims, wherein the plurality of struts are configured as cross shapes or asterisk shapes.

3. The structure as claimed in any one of the preceding claims, wherein each reciprocal patterning unit exhibits at least one degree of symmetry.

4. The structure as claimed in claim 3, wherein the at least one degree of symmetry comprises translational symmetry or rotational symmetry.

5. A method of forming a structure, comprising the steps of:

providing a membrane with tensile properties; and

disposing a plurality of reciprocal patterning units within the membrane, wherein each reciprocal patterning unit comprises a plurality of struts and wherein each of the plurality of struts is configured to provide tension forces in a plurality of opposing directions to an area of the membrane in each reciprocal patterning unit, and wherein the plurality of opposing directions comprise four or more opposing directions, and wherein the area of the membrane in each reciprocal patterning unit comprises endpoints of the plurality of struts; and

configuring the endpoints of each of the plurality of struts to define an area corresponding to a polygon comprising three or more edges,

wherein the membrane exerts compression forces on each of the plurality of struts, and

wherein each of the plurality of struts exerts the tension forces on the membrane simultaneously to maintain structural integrity of the structure.

6. The method as claimed in claim 5, further comprising configuring the plurality of struts as cross shapes or asterisk shapes.

7. The method as claimed in claim 5 or 6, further comprising configuring each reciprocal patterning unit to exhibit at least one degree of symmetry.

8. The method as claimed in claim 7, wherein the at least one degree of symmetry comprises translational symmetry or rotational symmetry.