WHAT IS CLAIMED IS:

1. A structure formed by temperature difference, comprising:

an enveloped part having a free section and an engagement section extending from the free section;

an enveloping part defining at least one holding space corresponding to the engagement section of the enveloped part, the holding space being dimensioned to be slightly less than the engagement section of the enveloped part, wherein the holding space is thermally expanded to be larger than the engagement section of the enveloped part by heating the enveloping part to reach a predetermined temperature difference over the enveloped part, so that the engagement section of the enveloped part is movable into or from the holding space, and wherein when the enveloping part is cooled, the holding space shrinks to its original size, causing the enveloping part to tightly hold the engagement section of the enveloped part; and

a low heat transfer layer disposed in the holding space, between the engagement section of the enveloped part and the enveloping part, the low heat transfer layer having a thermal conductivity less than each of the enveloped part and the enveloping part; whereby the low heat transfer layer reduces heat transferred from the enveloping part to the enveloped part, thus facilitating the enveloping part being heated to reach the predetermined temperature difference over the enveloped part;

wherein the low heat transfer layer is formed of a material having a melting point lower than a predetermined temperature, whereby when the enveloping part is heated to a temperature greater than the predetermined temperature, the material absorbs heat transferred from the enveloping part and experiences a phase change thereof to stop temperature from rising, thus facilitating the enveloping part being heated to reach the predetermined temperature difference over the enveloped part.

2. The structure of claim 1, wherein the enveloped part is in the form of a cylindrical body whereas the holding space of the enveloping part is in the form of a cylindrical hole

having a radius slightly than the sum of the radius of the cylindrical body and the thickness of the low heat transfer layer.

3. The structure of claim 1, wherein the low heat transfer layer is formed on an outer surface of the engagement section of the enveloped part.

4. The structure of claim 1, wherein the low heat transfer layer is formed on an inner surface that defines the holding space of the enveloping part.

5. The structure of claim 1, wherein the low heat transfer layer is formed of a material having a specific heat greater than each of the enveloped part and the enveloping part.

6. In a method of forming a structure by temperature difference, which involves an enveloped part being assembled with an enveloping part, the enveloped part having a free section and an engagement section extending from the free section, the enveloping part defining a holding space corresponding to the engagement section of the enveloped part, a low heat transfer layer disposed in the holding space, between the engagement section of the enveloped part and the enveloping part, the low heat transfer layer having a thermal conductivity greater than each of the enveloped part and the enveloping part, the method comprising:

(a) heating the enveloping part to expand the holding space thereof such that the holding space has a dimension greater than a total of the engagement section of the enveloped part and the low heat transfer layer;

(b) placing the engagement section of the enveloped part together with the low heat transfer layer in the holding space of the enveloping part, wherein the low heat transfer layer is located between the engagement section of the enveloped part and the enveloping part to reduce thermal conduction therebetween; and

(c) cooling the enveloping part to shrink the holding space such that the enveloping part tightly holds the low heat transfer layer and the engagement section of the enveloped part;

wherein the low heat transfer layer is formed of a material having a melting point lower

than a predetermined temperature, whereby when the enveloping part is heated to a temperature greater than the predetermined temperature, the material absorbs heat transferred from the enveloping part and experiences a phase change thereof to stop temperature from rising, thus facilitating the enveloping part being heated to reach the predetermined temperature difference over the enveloped part.

7. A lightweight rigid assembly, comprising:

a plurality of enveloped parts, each of which has a free section and an engagement section extending from the free section;

a plurality of enveloping parts, each of which defines a holding space corresponding to the engagement section of one of the enveloped arts, the holding space being dimensioned to be slightly less than the engagement section of the enveloped part, wherein the holding space is thermally expanded to be larger than the engagement section of the enveloped part by heating the enveloping part to reach a predetermined temperature difference over the enveloped part, so that the engagement section of the enveloped part is movable into or from the holding space, and wherein when the enveloping part is cooled, the holding space shrinks to its original size to have the enveloping part tightly hold the engagement section of the enveloped part; and

a plurality of low heat transfer layers, each of which is disposed in one holding space, between the corresponding enveloped part and the corresponding enveloping part, the low heat transfer layer having a thermal conductivity less than each of the enveloped part and the enveloping part, so that the low heat transfer layer reduces heat transferred from the enveloping part to the enveloped part, thus facilitating the enveloping part being heated to reach the predetermined temperature difference over the enveloped part;

wherein the enveloped parts and the enveloping parts are configured to form a three-dimensional support frame;

wherein each of the low heat transfer layers is formed of a material having a melting

point lower than a predetermined temperature, whereby when the enveloping part is heated to a temperature greater than the predetermined temperature, the material absorbs heat transferred from the enveloping part and experiences a phase change thereof to stop temperature from rising, thus facilitating the enveloping part being heated to reach the predetermined temperature difference over the enveloped part.

8. The lightweight rigid assembly of claim 7, wherein the three-dimensional support frame includes at least one enclosed sub-frame formed by some of the enveloped parts and the enveloping parts.

9. The lightweight rigid assembly of claim 7, wherein each of the enveloping parts and the enveloped parts has the same thermal conductivity, and each of the low heat transfer layers has a thermal conductivity significantly lower than each of the enveloping parts and the enveloped parts.

10. The lightweight rigid assembly of claim 7, wherein each of the low heat transfer layers is formed of a material having a specific heat greater than each of the enveloped parts and the enveloping parts.