WHAT IS CLAIMED IS:

1. A method comprising:

positioning a heat source proximate to a first side of a composite material, said composite material having the first side and a second side, with a structure located proximate to the second side of the composite material, said structure having a first side and a second side, with the first side of the structure located proximate to the second side of the composite material;

positioning a thermoelectric device proximate to the second side of the structure, said thermoelectric device in communication with a controller;

contacting the second side of the structure with a temperature sensing device, said temperature sensing device in communication with the controller;

activating the heat source;

applying heat from the heat source to the first side of the composite material;

heating the composite material to a first temperature;

providing an electric current to the thermoelectric device; and

substantially maintaining the temperature of the structure at a second temperature that is different than the first temperature of the composite material.

2. The method of Claim 1, wherein, in the step of positioning a heat source proximate to a first side of a composite material, the heat source comprises a heat blanket.

3. The method of Claim 1 or 2, wherein, in the step of positioning a heat source proximate to a first side of a composite material, the structure comprises a material different from the composite material.

4. The method of any one of Claims 1-3, wherein, in the step of positioning a heat source proximate to a first side of a composite material, the structure comprises a metallic material.

5. The method of any one of Claims 1-4, wherein, in the step of positioning a thermoelectric device proximate to the second side of the structure, the thermoelectric device is a Peltier device.

6. The method of any one of Claims 1-5, wherein, in the step of substantially maintaining the temperature of the structure at a second temperature that is different from the first temperature of the composite material, the second temperature is maintained at a temperature that is less than the first temperature of the composite material.

7. The method of any one of Claims 1-6, further comprising:

repairing the composite material.

METHODS AND APPARATUSES FOR MAINTAINING TEMPERATURE DIFFERENTIAL IN MATERIALS USING THERMOELECTRIC DEVICES DURING HOT BONDED REPAIR

ABSTRACT

Methods systems and apparatuses are disclosed for maintaining and controlling the temperature of a material adjoining a composite material in situ, while the composite material is being heating during a composite material repair.

FIG.2