Claims:

1. A non-invasive body contouring system comprising:

a housing;

a source of electromagnetic radiation configured to generate treatment energy, the source disposed within the housing;

an umbilical extending from the housing;

an applicator, wherein the applicator contacts a surface of a body and delivers treatment energy thereto, wherein the umbilical receives treatment energy from the source and delivers the treatment energy to the applicator,

wherein the applicator is configured to initially apply electromagnetic radiation to a skin surface for a duration sufficient to initially raise a temperature of a target region at or below a dermis/hypodermis junction to a hyperthermic temperature in a range from 42 °C to 47 °C and wherein the electromagnetic radiation exhibits a wavelength of about 1210 nm;

wherein the applicator is further configured to thereafter, maintain the target region within the hyperthermic temperature range for a treatment duration from 20 minutes to 30 minutes, wherein the target region is maintained within the hyperthermic temperature range by modulating the electromagnetic radiation applied to the skin surface so as to cyclically cool and heat the target region, the treatment comprising a cooling phase and a heating phases,

wherein the duration of the cooling phase is in a range from 3 seconds to 15 seconds and the duration of the heating phase is in a range from 3 seconds to 15 seconds; and after the treatment duration, application of electromagnetic radiation to the skin surface terminates.

2. The system of claim 1, wherein the target region is at a depth in a range of 3 mm to 1 cm below the skin surface and the target region comprises the dermis/hypodermis junction.

3. The system of claim 1, wherein the target region is at a depth in a range of 1 cm to 3 cm below the skin surface and the target region comprises fat tissue below the dermis/hypodermis junction

4. The system of claim 1, wherein modulating the electromagnetic radiation applied to the skin surface comprises adjusting the power of the electromagnetic radiation applied to the skin surface between a first power for a cooling duration and a second power for a heating duration so as to cyclically cool and heat the target region.

5. The system of claim 3, wherein the second power of the electromagnetic radiation is in a range between 1 W/cm^2 and 2 W/cm^2.

6. The system of claim 5, wherein the first power of the electromagnetic radiation is substantially zero.

7. The system of claim 1, further comprising a cooling surface through which the electromagnetic radiation is applied to the skin onto the surface of the patient's skin when maintaining the target region within the hyperthermic temperature range, wherein the temperature of the cooling surface is maintained in a range of

15 °C to 35 °C.

8. The system of claim 6, wherein the temperature of the cooling surface is maintained in a range of 25 °C to 30 °C.

9. The system of claim 1, wherein the treatment duration is in a range from 20 minutes to 25 minutes.

10. The system of claim 1, wherein the duration of the cooling phase is in a range from 3 seconds to 10 seconds and the duration of the heating phase is in a range from 3 seconds to 10 seconds.

11. The system of claim 1, wherein the duration of the cooling phase is:

(a) in a range from 3 seconds to 7 seconds and the duration of the heating phase is in a range from 3 seconds to 7 seconds; or

(b) in a range from 3 seconds to 6 seconds and the duration of the heating phase is in a range from 3 seconds to 6 seconds; or

(c) 5 seconds and the duration of the heating phase is 5 seconds; or

(d) 4 seconds and the duration of the heating phase is 6 seconds.

12. The system of claim 1, wherein the electromagnetic radiation is applied to the skin surface to initially raise the temperature of the target region to the hyperthermic temperature for a duration in a range of 20 seconds to 40 seconds.

13. The system of claim 1, wherein the applicator is a handpiece.

14. The system of claim 1, wherein the electromagnetic radiation is delivered and heat is absorbed by one or more components of an applicator.