Claims:

1. A non-invasive body contouring system, comprising:

a housing (200);

a source of electromagnetic radiation configured to generate treatment energy and, disposed within the housing an applicator (300);

a cooling surface for contacting skin and being suitable for passing EMR therethrough;

an umbilical cord (405) extending from the housing (200) and coupled at a distal end to the applicator;

the applicator (300) being configured to contact a surface of a body and deliver treatment energy thereto, wherein the umbilical cord (405) is configured to receive treatment energy from the source and deliver the treatment energy to the applicator,

wherein the applicator (300) 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;

wherein the applicator (300) 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 applicator is configured to maintain the temperature of the target region 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 phase,

wherein the system is configured to provide electromagnetic radiation to be employed during the heating phase a) in a power density range of 1 W/cm^2 to 5 W/cm^2, or b) in a power density range of 0.5 W/cm^2 to 10 W/cm^2 and in the wavelength range of 800 to 1300 nm;

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

wherein the applicator (300) is configured to terminate application of electromagnetic radiation to the skin after the treatment duration.

2. The system of claim 1, configured to treat the target region comprising the dermis/hypodermis junction at a depth in a range of 3 mm to 1 cm below the skin surface.

3. The system of claim 1, configured to treat the target region comprising fat tissue below the dermis/hypodermis junction at a depth in a range of 1 cm to 3 cm below the skin surface.

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

5. The system of claim 4, wherein the second power density 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, wherein the applicator (300) is configured to apply the electromagnetic radiation through said cooling surface onto the surface of the patient's skin when maintaining the target region within the hyperthermic temperature range, wherein the system is configured to maintain temperature of the cooling surface in a range of 15 °C to 35 °C.

8. The system of claim 7, configured to maintain the temperature of the cooling surface in a range of 25 °C to 30 °C.

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

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

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

(a) in a range from 3 seconds to 7 seconds and the duration of the heating phase 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 in a range from 3 seconds to 6 seconds; or

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

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

12. The system of claim 1, wherein the electromagnetic radiation exhibits at least one wavelength in the near infrared range, optionally wherein the electromagnetic radiation exhibits a wavelength:

(a) of 1210 nm; or

(b) selected from the group consisting of 800 nm, 940 nm, and 1060 nm.

13. The system of claim 1, wherein the system is configured to apply the electromagnetic energy 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.

14. The system of claim 1, wherein the applicator (300) is a handpiece.

15. The system of claim 1, wherein one or more components of the applicator (300) is configured to deliver electromagnetic radiation and absorb heat.