CLAIMS

1. System (21) for spatially controlling an amount of energy delivered to a processed surface (5) of a processed substrate (1) comprising a first area (11) and a second area (13), said first area (11) having a first combination of optical properties and thermal properties, and said second area (13) having a second combination of optical properties and thermal properties, said first combination and second combination being different, said system (21) comprising a light source (23) configured to emit a pulsed light beam (27) towards the processed surface (5), wherein the pulsed light beam (27) delivers a first amount of energy (E1) onto said first area (11) of the processed surface (5) so that said first area (11) reaches a first target temperature (Tt1), and a second amount of energy (E2) to said second area (13) of the processed surface (5) so that said second area (13) reaches a second target temperature (Tt2),

wherein the system (21) comprises a mask (31) situated between the light source (23) and the processed surface (5) of the processed substrate (1), said mask (31) comprising:

- a first zone (33) having a first transmission coefficient (k1) determined so that the first amount of energy (E1) is delivered to the first area (11), and
- a second zone (35) having a second transmission coefficient (k2) determined so that the second amount of energy (E2) is delivered to the second area (13).

2. System (21) according to claim 1, wherein the first amount of energy (E1) is delivered uniformly and simultaneously over the first area (11) and wherein the second amount of energy is delivered uniformly and simultaneously over the second area (13), within +/- 1 %.

3. System (21) according to claim 1 or 2, wherein each area (11, 13) has a surface area at least equal to 1 μm^2.

4. System (21) according to any one of claims 1 to 3, wherein one of the transmission coefficient (k1, k2) is zero so as to modify a shape of pulsed light beam (27).

5. System (21) according to any one of claims 1 to 4, wherein the first and second zones (33, 35) have a shape, a dimension and a position that are fixed with respect to the processed substrate (1).

6. System (21) according to any one of claims 1 to 5, wherein the first transmission coefficient (k1) and the second transmission coefficient (k2) are determined so the first target temperature (Tt1) and the second target temperature (Tt2) are equal.

7. System (21) according to any one of claims 1 to 6, wherein the first zone (33) has a first coating configured to determine the first transmission coefficient (k1), and the second zone (35) has a second coating configured to determine the second transmission coefficient (k2).

8. System (21) according to any one of claims 1 to 7, wherein the first zone (33) has a first thickness configured to determine the first transmission coefficient (k1) and the second zone (35) has a second thickness configured to determine the second transmission coefficient (k2).

9. System (21) according to any one of claims 1 to 8, wherein the first zone (33) has a first aperture pattern configured to determine the first transmission coefficient (k1) and the second zone (35) has a second aperture pattern configured to determine the second transmission coefficient (k2).

10. System (21) according to any one of claims 1 to 7, wherein the mask (31) comprises a digital micromirror device and wherein the system (21) further comprises a controller configured to rotate each of the micro mirrors of the micromirror device so that the first zone (33) achieves the first transmission coefficient (k1) and the second zone (35) achieves the second transmission coefficient (k2).

11. System (21) according to any one of claims 1 to 4, wherein at least one of the first and second zones (33, 35) has a shape, a dimension or a position that is

modifiable with respect to the processed substrate (1).

12. System (21) according to claim 11, wherein the mask (31) comprises plates (73, 75, 77, 79) that are movable with respect to each other so as to modify the position or shape or dimension of at least one of the first and second zones (33, 35).

13. Method for spatially controlling an amount of energy delivered to a processed surface (5) of a processed substrate (1), said processed surface (5) comprising a first area (11) and a second area (13), said first area (11) having a first combination of optical properties and thermal properties, and said second area (13) having a second combination of optical properties and thermal properties, said first combination and second combination being different comprising steps of:

g) emitting, with a light source (23), a pulsed light beam (27) towards the processed surface (5),

h) delivering a first amount of energy (E1) onto said first area (11) of the processed surface (5) so that said first area (11) reaches a first target temperature (Tt1),

i) delivering a second amount of energy (E2) to said second area (13) of the processed surface (5) so that said second area (13) reaches a second target temperature (Tt2),

wherein the method comprising steps of:

f) placing a mask (31) between the light source (19) and the processed surface (5) of the processed substrate (1), said mask (31) comprising a first zone (33) having a shape homothetic with the shape of the first area (11) of the processed surface (5), and a second zone (35) having a shape homothetic with the shape of the second area (13) of the processed surface (5),

d) determining a first transmission coefficient (k1) of the first zone (33) based on the first amount of energy (E1) and a second transmission coefficient (k2) of the second zone (31) based on the second amount of energy (E2);

or steps of:

l) placing a mask (31) between the light source (23) and the processed surface (5) of the processed substrate (1), said mask (31) comprising a first zone (33) having a first transmission coefficient (k1) determined so that the first amount

of energy (E1) is delivered to the first area (11), and a second zone (35) having a second transmission coefficient (k2) determined so that the second amount of energy (E2) is delivered to the second area (13),

m) modifying the shape or a dimension or a position of the first zone (33) so that the first zone (33) has a shape that is successively homothetic with the shape of the first area (11) of the processed surface (5) of the processed substrate (1) and with the shape of the second area (13) of the processed surface (5), so that the first amount of energy (E1) is delivered onto said first area (11) and the second amount of energy (E2) is delivered to said second area (13).

14. Method according to claim 13, wherein the first amount of energy (E1) is delivered uniformly and simultaneously over the first area (11), and wherein the second amount of energy (E2) is delivered uniformly and simultaneously over the second area (13) within 1%.

15. Method according to claim 14, wherein the first area (11) of the processed surface (5) of the processed substrate (1) and the second area (13) of the processed surface (5) of the processed substrate (1) are illuminated simultaneously by the pulsed light beam (27).

16. Method according to any one of claims 13 to 15, comprising steps of:

a) illuminating a test surface (117) of a test substrate (115) with a light beam (27), wherein the test surface (117) comprises a first test area (119) having the same combination of optical properties and thermal properties as the first combination of optical properties and thermal properties of the first area (11) of the processed surface (5) of the processed substrate (1), and a second test area (121) having the same combination of optical properties and thermal properties as the second combination of optical properties and thermal properties of the second area (13) of the processed surface (5) of the processed substrate (1) ,

b) detecting with a radiation detector (127), a first electromagnetic radiation (123) and a second electromagnetic radiation (125) respectively emitted by the first test area (119) of the test surface (117) and the second test area (121) of the test surface (117), in response to the illumination,

c) determining the first amount of energy (E1) based on said first

electromagnetic radiation (123), and the second amount of energy (E2) based on said second electromagnetic radiation (125).

17. Method according to claim 16, comprising a step of generating a map of a spatial distribution of a physical property or physical quantity emitted in response to the illumination (46) of the test surface (117) based on the first electromagnetic radiation (123) and on the second electromagnetic radiation (125) detected on the test surface (117), wherein the map is used to calculate said amounts of energy delivered onto said processed surface (5) or the shape, dimension and position of said first and second areas (11, 13) of said processed surface (5).