CLAIMS

What is claimed is:

1. A baseplate for a substrate support, the baseplate comprising:

a heater layer configured to selectively heat the baseplate; and

a heat spreader disposed between the heater layer and an upper surface of the baseplate, wherein the heat spreader is configured to distribute heat provided by the heater layer throughout the baseplate, and wherein

the baseplate comprises a first material that has a first coefficient of thermal expansion (CTE) and a first thermal conductivity, and

the heat spreader comprises a second material that has a second CTE different from the first CTE and a second thermal conductivity greater than the first thermal conductivity.

2. The baseplate of claim 1, wherein the heater layer comprises resistive heating elements.

3. The baseplate of claim 1, wherein the first material is dielectric.

4. The baseplate of claim 1, wherein the second material comprises at least one of carbon, pyrolytic graphite, molybdenum-graphite, and diamond.

5. The baseplate of claim 1, wherein the second CTE is different from the first CTE.

6. The baseplate of claim 1, wherein the second CTE is greater than the first CTE.

7. The baseplate of claim 1, wherein the heat spreader comprises an inner layer that has the second CTE and an outer layer comprising a third material that has a third CTE that is between the first CTE and the second CTE.

8. The baseplate of claim 7, wherein the heat spreader comprises a middle layer disposed between the inner layer and the outer layer.

9. The baseplate of claim 1, further comprising a plurality of interlayers disposed at least one of (i) between the heat spreader and the upper surface of the baseplate and (ii) between the heat spreader and the heater layer.

10. The baseplate of claim 9, wherein the plurality of interlayers comprises a third material that has a third CTE that is between the first CTE and the second CTE.

11. The baseplate of claim 9, wherein individual ones of the plurality of interlayers alternate with layers of the first material.

12. The baseplate of claim 1, wherein the heat spreader is isotropic.

13. The baseplate of claim 1, wherein the heat spreader has at least one of anisotropic thermal conductivity and an anisotropic CTE.

14. The baseplate of claim 1, wherein the baseplate further comprises a functionally graded material (FGM).

15. A substrate support for a substrate processing system, the substrate support comprising:

a baseplate comprising a functionally graded material (FGM), wherein the FGM comprises a dielectric material and a graded filler material; and

a heat spreader embedded within the baseplate, wherein the heat spreader is configured to distribute heat throughout the baseplate, and wherein the heat spreader has a first coefficient of thermal expansion (CTE) and a first thermal conductivity,

wherein the FGM has a second CTE and a second thermal conductivity.

16. The substrate support of claim 15, wherein the FGM is a functionally graded ceramic (FGC).

17. The substrate support of claim 16, wherein the FGC is a ceramic matrix composite (CMC) material.

18. The substrate support of claim 15, wherein the second CTE of the FGM varies in a vertical direction.

19. The substrate support of claim 16, wherein the first CTE is different from the second CTE.

20. A substrate support for a substrate processing system, the substrate support comprising:

a baseplate that comprises a first material that has a first coefficient of thermal expansion (CTE) and a first thermal conductivity;

a heater layer embedded within the baseplate;

a heat spreader disposed on the baseplate, wherein the heat spreader is configured to spread heat generated by the heater layer in a lateral direction, and wherein the heat spreader comprises a second material that has a second CTE and a second thermal conductivity greater than the first thermal conductivity; and

a cap layer disposed on the heat spreader.