

Claims:

1. A processing chamber, comprising:
 - a housing structure having a first side wall and a second side wall opposite the first side wall in a first direction;
 - a gas injection assembly coupled to the first side wall;
 - a gas exhaust assembly coupled to the second side wall;
 - a quartz chamber disposed within the housing structure;
 - a process kit disposed within the quartz chamber, the process kit comprising:
 - an enclosure having inner surfaces comprising a material configured to cause black-body radiation within the enclosure; and
 - a cassette disposed within the enclosure, the cassette having a plurality of shelves configured to retain substrates thereon;
 - a plurality of upper lamp modules disposed on a first side of the quartz chamber and configured to provide radiative heat to the substrates; and
 - a plurality of lower lamp modules disposed on a second side of the quartz chamber opposite the first side in a second direction perpendicular to the first direction and configured to provide radiative heat to the substrates.
2. The processing chamber of claim 1, wherein the process kit further comprises:
 - an outer liner comprising an upper outer liner and a lower outer liner;
 - an inner liner having:
 - a plurality of first inlet openings disposed on an injection side of the inner liner and configured to be in fluid communication with the gas injection assembly; and
 - a plurality of first outlet openings disposed on an exhaust side of the inner liner and configured to be in fluid communication with the gas exhaust assembly; and
 - a top plate and a bottom plate attached to an inner surface of the inner liner, the top plate and the bottom plate forming the enclosure together with the inner liner.
3. The processing chamber of claim 2, wherein the inner liner, the top plate, and the bottom plate comprise silicon carbide (SiC).

4. The processing chamber of claim 2, wherein the inner liner, the top plate, and the bottom plate comprise silicon-carbide (SiC) coated graphite.
5. The processing chamber of claim 2, wherein the process kit further comprises:
 - an inlet shield disposed between the upper outer liner and the lower outer liner on the injection side, the inlet shield having a plurality of second inlet openings in fluid communication with the plurality of first inlet openings in the inner liner; and
 - an outlet shield disposed between the upper outer liner and the lower outer liner on the exhaust side, the outlet shield having a plurality of second outlet openings in fluid communication with the plurality of first outlet openings in the inner liner.
6. The processing chamber of claim 5, further comprising:
 - a heat shield disposed between the inlet shield and the inner liner on the injection side, the heat shield having a plurality of third inlet openings in fluid communication with the plurality of first inlet openings in the inner liner.
7. The processing chamber of claim 1, wherein the plurality of shelves comprises silicon carbide (SiC).
8. The processing chamber of claim 1, wherein the plurality of shelves comprises silicon-carbide (SiC) coated graphite.
9. A processing chamber, comprising:
 - a housing structure having a first side wall and a second side wall opposite the first side wall in a first direction;
 - a gas injection assembly coupled to the first side wall;
 - a gas exhaust assembly coupled to the second side wall;
 - a quartz chamber disposed within the housing structure;
 - a process kit disposed within the quartz chamber, the process kit comprising:
 - a cassette having a plurality of shelves configured to retain substrates thereon;

a plurality of upper lamp modules disposed on a first side of the quartz chamber and configured to provide radiative heat to the process kit;

a plurality of lower lamp modules disposed on a second side of the quartz chamber opposite the first side in a second direction perpendicular to the first direction and configured to provide radiative heat to the process kit; and

a lift-rotation mechanism configured to move the cassette in the second direction and rotate the cassette about the second direction.

10. The processing chamber of claim 9, wherein the process kit further comprises:
an outer liner comprising an upper outer liner and a lower outer liner;
an inner liner having:

a plurality of first inlet openings disposed on an injection side of the inner liner and configured to be in fluid communication with the gas injection assembly; and

a plurality of first outlet openings disposed on an exhaust side of the inner liner and configured to be in fluid communication with the gas exhaust assembly; and

a top plate and a bottom plate attached to an inner surface of the inner liner, the top plate and the bottom plate forming an enclosure together with the inner liner, wherein inner surfaces of the enclosure comprise material configured to cause black-body radiation within the enclosure.

11. The processing chamber of claim 10, wherein the inner liner, the top plate, and the bottom plate comprise silicon carbide (SiC).

12. The processing chamber of claim 10, wherein the inner liner, the top plate, and the bottom plate comprise silicon-carbide (SiC) coated graphite.

13. The processing chamber of claim 10, wherein the process kit further comprises:
an inlet shield disposed between the upper outer liner and the lower outer liner on the injection side, the inlet shield having a plurality of second inlet openings in fluid communication with the plurality of first inlet openings in the inner liner; and

an outlet shield disposed between the upper outer liner and the lower outer liner on the exhaust side, the outlet shield having a plurality of second outlet openings in fluid communication with the plurality of first outlet openings in the inner liner.

14. The processing chamber of claim 13, wherein the process kit further comprises:
a heat shield disposed between the inlet shield and the inner liner on the injection side, the heat shield having a plurality of third inlet openings in fluid communication with the plurality of first inlet openings in the inner liner.

15. The processing chamber of claim 9, wherein the plurality of shelves comprises silicon carbide (SiC).

16. The processing chamber of claim 9, wherein the plurality of shelves comprises silicon-carbide (SiC) coated graphite.

17. A processing system comprising:
a processing chamber comprising:
a housing structure having a first side wall and a second side wall opposite the first side wall in a first direction;
a gas injection assembly coupled to the first side wall;
a gas exhaust assembly coupled to the second side wall;
a quartz chamber disposed within the housing structure;
a process kit disposed within the quartz chamber, the process kit comprising:
an enclosure having inner surfaces inner surfaces comprising a material configured to cause black-body radiation within the enclosure;
a cassette disposed within the enclosure, the cassette having a plurality of shelves configured to retain substrates thereon;
a plurality of upper lamp modules disposed on a first side of the quartz chamber and configured to provide radiative heat to the substrates;

a plurality of lower lamp modules disposed on a second side of the quartz chamber opposite the first side in a second direction perpendicular to the first direction and configured to provide radiative heat to the substrates; and
a lift-rotation mechanism configured to move the cassette in the second direction and rotate the cassette about the second direction; and
a transfer robot configured to transfer substrates into and from the process kit disposed in the processing chamber.

18. The processing system of claim 17, wherein the process kit further comprise:
an outer liner comprising an upper outer liner and a lower outer liner;
an inner liner having:
a plurality of first inlet openings disposed on an injection side of the inner liner and configured to be in fluid communication with the gas injection assembly;
a plurality of first outlet openings disposed on an exhaust side of the inner liner and configured to be in fluid communication with the gas exhaust assembly; and
a slit opening; and
a top plate and a bottom plate attached to an inner surface of the inner liner, the top plate and the bottom plate forming the enclosure together with the inner liner, wherein inner surfaces of the enclosure comprise material configured to cause black-body radiation within the enclosure.
19. The processing system of claim 18, wherein
the inner liner, the top plate, the bottom plate, and the plurality of shelves comprise material selecting from silicon carbide (Si) and silicon-carbide (SiC) coated graphite.
20. The processing system of claim 18, wherein the process kit further comprises:
an inlet shield disposed between the upper outer liner and the lower outer liner on the injection side, the inlet shield having a plurality of second inlet openings in fluid communication with the plurality of first inlet openings in the inner liner;

an outlet shield disposed between the upper outer liner and the lower outer liner on the exhaust side, the outlet shield having a plurality of second outlet openings in fluid communication with the plurality of first outlet openings in the inner liner; and

a heat shield disposed between the inlet shield and the inner liner on the injection side, the heat shield having a plurality of third inlet openings in fluid communication with the plurality of first inlet openings in the inner liner.