CLAIMS:

1. A microwave filter for use with a microwave brazing system having a brazing chamber, a vacuum line, and a pressure gauge located proximate the vacuum line, the microwave filter comprising:

a baffle plate configured to be mounted in the vacuum line between the brazing chamber and the pressure gauge, the baffle plate comprising:

a first face;

a second face that opposes the first face; and

a plurality of openings through the first face and the second face; and

a plurality of hollow pipes extending from the second face and substantially aligned with the plurality of openings, wherein the plurality of hollow pipes are configured to substantially prevent the transmission of microwaves from the brazing chamber to the pressure gauge, and are further configured to allow gas to flow between the brazing chamber and the vacuum line;

wherein the baffle plate contains at least one mounting aperture configured to allow mounting of the filter with respect to a wall of the brazing chamber.

2. The microwave filter of claim 1, wherein the plurality of hollow pipes have length-to-diameter ratios of at least about 6-to-1.

3. The microwave filter of claim 2, wherein the length-to-diameter ratios of the plurality of hollow pipes are at least about 10-to-1.

4. The microwave filter of claim 3, wherein the length-to-diameter ratios of the plurality of hollow pipes are at least about 20-to-1.

5. The microwave filter of claim 1, wherein the plurality of hollow pipes have lengths ranging from about 5 centimeters to about 50 centimeters.

6. The microwave filter of claim 1, wherein the plurality of hollow pipes extend at an angle to an axis that is orthogonal to the second face of the baffle plate.

7. The microwave filter of claim 1, wherein the plurality of hollow pipes comprise a number of hollow pipes ranging from 5 pipes to 50 pipes.

8. A microwave filter for use with a microwave brazing system having a brazing chamber and a vacuum line, the microwave filter comprising:

a baffle plate comprising:

a first face configured to face the brazing chamber;

a second face configured to face a conduit of the vacuum line; and

a plurality of openings through the first face and the second face; and

a plurality of hollow pipes extending from the second face and substantially aligned with the plurality of openings, wherein the plurality of hollow pipes are configured to substantially prevent the transmission of microwaves from the brazing chamber to the conduit of the vacuum line, and further configured to allow gases to flow from the brazing chamber to the conduit of the vacuum line;

wherein the baffle plate contains at least one mounting aperture configured to allow mounting of the filter with respect to a wall of the brazing chamber.

9. The microwave filter of claim 8, wherein the plurality of hollow pipes have length-to-diameter ratios of at least about 6-to-1.

10. The microwave filter of claim 9, wherein the length-to-diameter ratios of the plurality of hollow pipes are at least about 10-to-1.

11. The microwave filter of claim 10, wherein the length-to-diameter ratios of the plurality of hollow pipes are at least about 20-to-1.

12. The microwave filter of claim 8, wherein the plurality of hollow pipes extend at an angle to an axis that is orthogonal to the second face of the baffle plate.

13. The microwave filter of claim 12, wherein the plurality of hollow pipes are a first plurality of hollow pipes, and wherein the microwave filter further comprises a second plurality of hollow pipes having length-to-diameter ratios that are less than length-to-diameter ratios of the first plurality of hollow pipes.

14. A microwave brazing system comprising:

a brazing chamber having a chamber wall;

a first opening disposed through the chamber wall and configured to relay microwaves from a microwave generator;

a second opening disposed through the chamber wall;

a conduit connected to the brazing chamber at the second opening;

at least one pressure gauge secured to the conduit, and configured to measure pressure within the conduit; and

a microwave filter attached to the second disposed through the chamber wall between the brazing chamber and the at least one pressure gauge, the microwave filter comprising a plurality of hollow pipes configured to substantially prevent the transmission of microwaves from the brazing chamber to the conduit, while allowing gas to flow between the brazing chamber and the conduit.

15. The microwave brazing system of claim 14, wherein the microwave filter further comprises a baffle plate secured to the chamber wall, wherein the plurality of hollow pipes are secured to the baffle plate and extend into the conduit.

16. The microwave brazing system of claim 15, wherein the plurality of hollow pipes extend at an angle to an axis that is orthogonal to the second face of the baffle plate.

17. The microwave brazing system of claim 16, wherein the plurality of hollow pipes are a first plurality of hollow pipes, and wherein the microwave filter further comprises a second plurality of hollow pipes having length-to-diameter ratios that are less than length-to-diameter ratios of the first plurality of hollow pipes.

18. The microwave brazing system of claim 14, wherein the plurality of hollow pipes comprise a number of hollow pipes ranging from 5 pipes to 50 pipes.

19. The microwave brazing system of claim 14, wherein the plurality of hollow pipes have length-to-diameter ratios of at least about 6-to-1.

20. The microwave brazing system of claim 14, further comprising at least one pump connected to the conduit for reducing the pressure within the conduit.

CLAIMS

1. A microwave brazing system comprising:

a brazing chamber having a chamber wall;

a first opening disposed through the chamber wall and configured to relay microwaves from a microwave generator;

a second opening disposed through the chamber wall;

a conduit connected to the brazing chamber at the second opening;

at least one pressure gauge secured to the conduit, and configured to measure pressure within the conduit; and

a microwave filter disposed between the brazing chamber and the at least one pressure gauge, the microwave filter comprising a plurality of hollow pipes configured to substantially prevent the transmission of microwaves from the brazing chamber to the conduit, while allowing gas to flow between the brazing chamber and the conduit;

wherein the microwave filter further comprises a baffle plate secured to the chamber wall, wherein the plurality of hollow pipes are secured in a cantilevered manner from the baffle plate to extend into the conduit;

wherein the plurality of hollow pipes extend into the conduit along an offset axis, the offset axis disposed at a nonzero angle α relative to a longitudinal axis, the longitudinal axis orthogonal to an inner rear face of the baffle plate.

2. The microwave brazing system of claim 1, wherein the plurality of hollow pipes are a first plurality of hollow pipes, and wherein the microwave filter further comprises a second plurality of hollow pipes having length-to-diameter ratios that are less than length-to-diameter ratios of the first plurality of hollow pipes.

3. The microwave brazing system of claim 1, wherein the plurality of hollow pipes comprise a number of hollow pipes ranging from 5 pipes to 50 pipes.

4. The microwave brazing system of claim 1, wherein the plurality of hollow pipes have length-to-diameter ratios of at least about 6-to-1.

5. The microwave brazing system of claim 1, further comprising at least one pump connected to the conduit for reducing the pressure within the conduit.

6. The microwave brazing system of claim 1, wherein the nonzero angle α directs the hollow pipes away from the at least one pressure gauge in the conduit.

7. The microwave brazing system of claim 1, wherein the nonzero angle α is less than 30°.

8. The microwave brazing system of claim 7, wherein the nonzero angle α is between 5° and 15°.

9. The microwave brazing system of claim 6, wherein the nonzero angle α is less than 30°.

10. The microwave brazing system of claim 9, wherein the nonzero angle α is between 5° and 15°.