

(57) **Abstract:** A microwave system for use within a microwave-assisted thermal atomic layer deposition system is disclosed which include at least one microwave generator configured to output at least one microwave signal, at least one waveguide assembly in communication with the at least one microwave generator and configured to receive the microwave signal, one or more isolators positioned within the waveguide assembly and configured to reduce or eliminate backscatter of the microwave signal from the waveguide assembly to the at least one microwave generator, at least one tuning device in positioned within the waveguide assembly and configured receive the microwave signal from the isolator and tune the microwave signal, and at least one microwave delivery device in communication with the waveguide assembly and configured to direct at least a portion of the microwave signal into at least one processing chamber

SA, SC, SD, SE, SG, SK, SL, ST, SV, SY, TH, TJ, TM, TN,
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of the microwave-assisted thermal atomic layer deposition system.