What is Claimed is:

1. An apparatus for treating gaseous pollutant without requiring fuel comprising:

a microwave source configured to generate a microwave oscillation;

a waveguide component coupled to the microwave source and configured to receive the microwave oscillation such that the microwave oscillation is propagated through the waveguide component; and

a resonant cavity coupled to the waveguide component and extending along a waveguide direction, the resonant cavity comprising a tapered chamber in proximity to the waveguide component and a combustion chamber distant from the waveguide component, the combustion chamber being configured to receive the microwave oscillation passed through the tapered chamber, and the microwave oscillation interacting with a non-fuel ignition gas in the combustion chamber to generate a torch;

wherein the waveguide direction is substantially parallel to a reference axis of the tapered chamber, and the tapered chamber comprises at least two inner walls opposite to each other and inclined inwardly toward the reference axis;

wherein the tapered chamber comprises a first top wall and a first bottom wall, the combustion chamber comprises a second top wall and a second bottom wall, a first difference in height is provided between the second top wall and a bottom end of the first top wall, a

second difference in height is provided between the second bottom wall and the first bottom wall, and a sum of the first difference in height and the second difference in height is 40 millimeters (mm).

2. The apparatus for treating gaseous pollutant without requiring fuel according to claim 1, further comprising an ignition source and a dielectric tube, wherein the dielectric tube is inserted in the combustion chamber and comprises a first end in proximity to the ignition source and a second end distant from the ignition source, the combustion chamber comprises a second top wall and a second bottom wall, the second end of the dielectric tube protrudes out from the combustion chamber and a third difference in height is provided between the second end of the dielectric tube and the combustion chamber.