CLAIMS

1. A process chamber component comprising:

a ceramic body of the process chamber component, the ceramic body having at least an exterior facing surface comprising a single phase bulk crystalline yttrium aluminum garnet (YAG),

wherein the single phase bulk crystalline YAG comprises yttrium oxide at a molar concentration ranging from 35 mole% to 40 mole% and aluminum oxide at a molar concentration ranging from 60 mole% to 65 mole%, and

wherein the single phase bulk crystalline YAG has a density of 98% or greater and a hardness greater than 10 GPa.

2. The process chamber component of claim 1, wherein the crystalline YAG has less than 0.1% porosity.

3. The process chamber component of claim 1, wherein the crystalline YAG has a hardness greater than 12 GPa.

4. The process chamber component of claim 1, wherein an average total number of yttrium based particles released from the crystalline YAG upon exposure to a corrosive chemistry is less than 3 per 500 radiofrequency hours.

5. The process chamber component of claim 4, wherein the corrosive chemistry comprises hydrogen based chemistry, halogen based chemistry, or a mixture thereof.

6. The process chamber component of claim 5, wherein the corrosive chemistry comprises one or more of HF, HBr, HCl, Cl_2, or H_2.

7. The process chamber component of claim 1, wherein the process chamber component comprises at least one of a lid, a nozzle, or a liner.

8. The process chamber component of claim 1, wherein the crystalline YAG is a result of a two-step sintering process comprising hot isotactic pressing (HIP).