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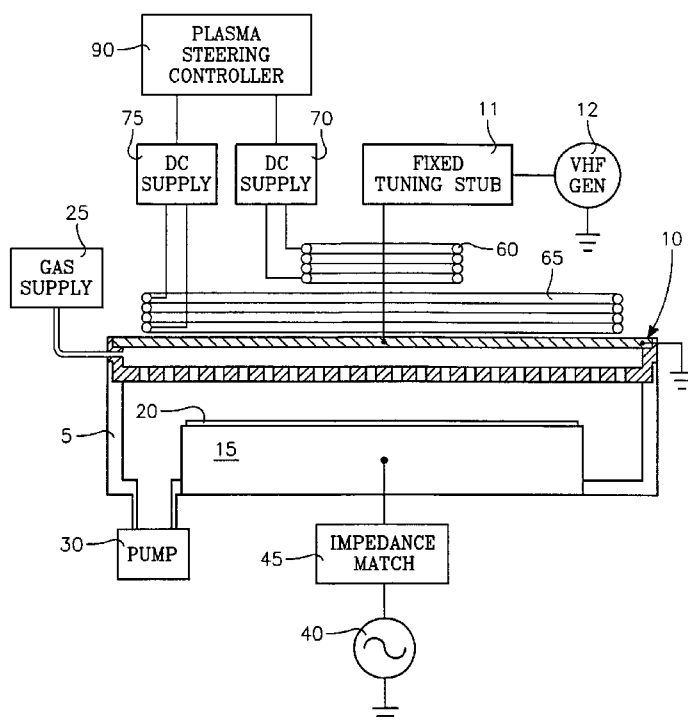
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(54) Title: CAPACITIVELY COUPLED PLASMA REACTOR WITH MAGNETIC PLASMA CONTROL



(57) Abstract: A plasma reactor includes a vacuum enclosure including a side wall and a ceiling defining a vacuum chamber, and a workpiece support within the chamber and facing the ceiling for supporting a planar workpiece, the workpiece support and the ceiling together defining a processing region between the workpiece support and the ceiling. Process gas inlets furnish a process gas into the chamber. A plasma source power electrode is connected to an RF power generator for capacitively coupling plasma source power into the chamber for maintaining a plasma within the chamber. The reactor further includes at least a first overhead solenoidal electromagnet adjacent the ceiling, the overhead solenoidal electromagnet, the ceiling, the sidewall and the workpiece support being located along a common axis of symmetry. A current source is connected to the first solenoidal electromagnet and furnishes a first electric current in the first solenoidal electromagnet whereby to generate within the chamber a magnetic field which is a function of the first electric current, the first electric current having a value such that the magnetic field increases uniformity of plasma ion density radial distribution about the axis of symmetry near a surface of the workpiece support.