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(54) Title: PLASMA PROCESSING WITH TUNABLE NITRIDATION

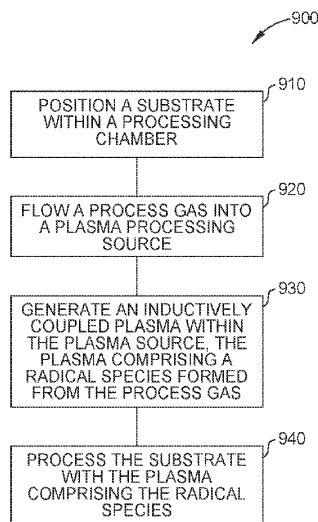


FIG. 9

(57) Abstract: In an embodiment, a method for nitriding a substrate is provided. The method includes flowing a nitrogen-containing source and a carrier gas into a plasma processing source coupled to a chamber such that a flow rate of the nitrogen-containing source is from about 3% to 20% of a flow rate of the carrier gas; generating an inductively-coupled plasma (ICP) in the plasma processing source by operating an ICP source, the ICP comprising a radical species formed from the nitrogen-containing source, the carrier gas, or both; and nitriding the substrate within the chamber, wherein nitriding includes operating a heat source within the chamber at a temperature from about 150°C to about 650°C to heat the substrate; maintaining a pressure of the chamber from about 50 mTorr to about 2 Torr; introducing the ICP to the chamber; and adjusting a characteristic of the substrate by exposing the substrate to the radical species.

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