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(54) **PLASMA PROCESSING DEVICE AND PLASMA PROCESSING METHOD**

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(57) **ABSTRACT**

There is provided a plasma processing device comprising: a chamber; an upper electrode; a showerhead provided below the upper electrode, which divides an internal space of the chamber into a first space between the upper electrode and the showerhead and a second space below the showerhead, and provides a plurality of introduction ports for introducing a gas into the second space and a plurality of openings penetrating the showerhead so that the first space and the second space are in communication with each other; a substrate support portion configured to support a substrate in the second space; an ion trap provided between the upper electrode and the showerhead, wherein the ion trap provides a plurality of through holes arranged not to align with the plurality of openings of the showerhead; a first gas supply portion configured to supply a gas to a region in the first space between the upper electrode and the ion trap; a second gas supply portion configured to supply the showerhead with a gas to be introduced from the plurality of introduction ports into the second space; a power source configured to produce a power for generating plasma, and connected to the upper electrode; and a switch configured to switchably connect the showerhead to one of a ground and the upper electrode.