

MODULAR REACTOR FOR MICROWAVE PLASMA-ASSISTED DEPOSITION

Abstract

- 5 The invention relates to a microwave plasma-assisted deposition modular reactor (1) for manufacturing synthetic diamond, said reactor being characterized in that it comprises at least three modulation elements, said modulation elements being selected from:
- a crown (450) adapted to be positioned between a first enclosure part (430) and a second enclosure part (440);
 - 10 - a substrate holder module (500), mobile in vertical translation and in rotation, in contact with a quarter-wave (501) and including at least one fluid cooling system (520);
 - a tray (900) mobile in vertical translation in order to change the shape and volume of the resonant cavity (41) and including through openings (911) allowing the gases to pass;
 - 15 - a gas distribution module (100), including a removable gas distribution plate (110) comprising an inner surface (111), an outer surface (112), and a plurality of gas distribution nozzles (113) forming channels between said surfaces (111, 112) capable of conducting a gas flow, and a support device (120) connected to a cooling system and adapted to accommodate the removable gas distribution plate (110); and
 - 20 - a substrate cooling control module (300), including a removable thermal resistance gas injection device (330).

[FIGURE 2]