

CLAIMS

1) System for the treatment of an object by plasma, said system comprising:

a treatment vacuum chamber (10) comprising a support on which the object to be treated is placed; and

at least two subassemblies (21, 22), each subassembly comprising at least three plasma sources (210, 211, 212 and 220, 221, 222) allowing a plasma to be generated from each plasma source (210, 211, 212 and 220, 221, 222), each plasma source (210, 211, 212 and 220, 221, 222) of a subassembly (21, 22) being supplied by radiofrequency power P_i and independently by a gas i at a flow-rate n_i

characterized in that the plasma generated by one subassembly (21) is a partially ionized gas or a gas mixture, of different chemical nature from the plasma generated by the other subassembly or subassemblies (22), each sub-assembly (21, 22) being intended to treat different specific zones of the object to be treated.

2) System according to Claim 1 in which each source of plasma (210, 211, 212 and 220, 221, 222) of a subassembly (21, 22) comprises:

- a gas inlet system (25);
- a discharge chamber in the form of a tube (201, 202, 203) made of a plasma-inert material; and
- a device (26) for coupling the radiofrequency (RF) power to the discharge chamber;
- a gas outlet.

- 3) System according to Claim 1 or 2 in which a control device controls each of the subassemblies (21, 22) depending upon a specific parameterization by application of radiofrequency power P_i and/or a flow-rate of gas n_i specific to each subassembly (21, 22).
- 4) System according to any of the previous claims in which each subassembly (21, 22) comprises a gas inlet, specific to the subassembly connected to the gas inlet (25) of each plasma source (210, 211, 212 and 220, 221, 222) of said subassembly (21, 22).
- 5) System according to any of the previous claims in which each subassembly (21, 22) comprises a conducting element connected to the coupling device (26) of each plasma source (210, 211, 212 and 220, 221, 222) of said subassembly (21, 22).
- 6) System according to any of the previous claims characterized in that the subassemblies (21, 22) are arranged along concentric rings.
- 7) System according to any of the previous claims in which the subassemblies (21, 22) are arranged in parallel.
- 8) Selective plasma treatment process of a composite object comprising at least two different materials A and B, said process implementing a Treatment System according to any of the Claims 1 to 7 and comprising the following steps:
 - a step of generating a first plasma by a first of the subassemblies (21) and treatment of the object using said first plasma;

- a step of generating a second plasma by a second of the subassemblies (22) and treatment of the object using said second plasma.

9) Process according to Claim 8 in which the plasma generation steps are repeated alternately, or with partial or total overlap.

10) Process according to Claim 8 or 9 in which the plasma generation steps are repeated with a partial overlap of the steps by at most 25%.