

METHOD FOR MAKING FUNCTIONALLY GRADIENT COATINGS BY 3D PRINTING BASED ON ELECTROSTATIC SPINNING AND ELECTROSTATIC SPRAYING

ABSTRACT

A method for making functionally gradient coatings by 3D printing based on electrostatic spinning and electrostatic spraying is disclosed, which uses a hybrid 3D printing system based on electrostatic spinning and electrostatic spraying including: a first injection pump, a second injection pump, a first nozzle, a second nozzle, a high voltage power supply, a core rod collector, a controller, a motor and a speed-adjusting unit. The first injection pump, the first nozzle, the high voltage power supply, the core rod collector and the controller constitute an electrostatic spinning subsystem. The second injection pump, the second nozzle, the high voltage power supply, the core rod collector and the controller constitute an electrostatic spraying subsystem. The electrostatic spinning subsystem is controlled by the controller to generate a first material coating, and the electrostatic spraying subsystem is controlled by the controller to generate a second material coating. The method can make multiple layers of functional gradient coatings according to individual needs.

(Figure 1)