

ABSTRACT

Disclosed is a method and device for preparing a high temperature water vapor enriched in active particles using plasma, the device comprising a plasma generator (1) and a high temperature vapor generator (2), wherein the middle of one end of the high temperature vapor generator (2) is provided with a high temperature plasma inlet (4) in communication with an outlet (1b) of the plasma generator (1); the plasma generator (1) has an inlet (1a) for non-oxidizing gases; the high temperature plasma inlet (4) is surrounded by an annular vapor inlet (3d), which annular vapor inlet (3d) has rotary guide blades (7) mounted therein. The casing of the high temperature vapor generator (2) has a shape of stepped increasing stages divided into 1-4 stage(s), and an annular narrow orifice (3a, 3b, 3c) for vapor entrance is provided between two adjacent casing parts at each stage, with the annular narrow orifice (3a, 3b, 3c) connected to a vapor pressure feeding device (3). The method comprises the steps of: spraying the prepared vapor and the high temperature plasma working materials ionized by the plasma generator (1) into the high temperature vapor generator (2) through their respective inlets, intensively mixing the high temperature vapor and the high temperature plasma, and heating and activating the vapor so as to form the vapor with active particle.