Abstract Submitted
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O atoms loss coefficient on porous SiO_2 and TiO_2 measured by plasma induced fluorescence KATIA ALLEGRAUD, LINA GATILOVA, OLIVIER GUAITELLA, JEAN GUILLON, ANTOINE ROUSSEAU, LPTP, Ecole Polytechnique, Palaiseau, FRANCE — The time evolution of O atoms density in the gas phase during the post-discharge of a pulsed plasma is studied using a plasma induced fluorescence technique (PIF): a main long pulse creates the plasma and a shorter one re-excites atoms in the time post-discharge was used. The gas pressure is 133 Pa in N_2/O_2 mixture and the plasma is a pulsed DC discharge. The surface loss coefficient of O atoms on pyrex, porous silica, porous TiO_2 is measured, this latter being a photocatalytic material. It is shown that the presence of porous silica or TiO_2 leads to a stong increase of the O atom surface loss coefficient. When nano cluster of TiO_2 are deposited on porous silica, the loss coefficient is first high and comparable to the case of the porous silica, but decreases after few milliseconds. Such a decrease of the surface loss coefficient has recently been reported in a pulsed microwave discharge [1]. The effect of the pre-irradiation of the porous materials by external ultraviolet is also studied.

[1] G. Cartry, X. Duten and A. Rousseau Plasma Sources Sci. Technol. 15 (2006) 479–488

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