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**Reactivity of atoms adsorbed on catalytic surfaces under plasma exposure** DANIIL MARINOV, OLIVIER GUAITELLA, ANTOINE ROUSSEAU, LPP, Ecole Polytechnique, UPMC, Université Paris Sud-11, CNRS, Palaiseau, France, MARKO HUEBNER, JURGEN ROEPCKE, INP- Greifswald, Felix-Hausdorff-Str. 2, 17489 Greifswald, Germany, VASCO GUERRA, CARLOS PINTASSILGO, Departemento de Engenharia Fisica, Faculade de Engenharia, Universidade do Porto, R. Dr. Roberto Frias, 4200-465, Porto, Portugal — Recently we have demonstrated that reactive atomic species may be adsorbed on different catalytic surfaces ($SiO_2$, $TiO_2$, pyrex) under low pressure $N_2/O_2$ plasma exposure [1]. Adsorbed N atoms recombine with gas phase O atoms to produce NO when exposed to $O_2$ plasma. Adsorbed O atoms initiate surface oxidation/losses of various probe molecules ($C_2H_2$, CO, NO, $NO_2$). Using laser absorption measurements of gas phase species as a fingerprint of surface reactions, we investigate the state of the surface after different pretreatment procedures and probe the number of adsorbed atoms as a function of pretreatment parameters (duration, power, wall temperature, pressure, etc.). Stability of adsorbed atoms under Ar plasma exposure is investigated. Comparison between different surfaces and different probe molecules provides information on the nature and binding energies of adsorbed atomic species. [1] D. Marinov, O. Guaitella, A. Rousseau and Y.Ionikh, J. Phys. D: Appl. Phys. **43** (2010) 115203

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