

Abstract Submitted
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Regeneration of inorganic sorbent surfaces using dielectric barrier discharge PAUL GRAVEJAT, FREDERIC THEVENET, Université Lille-Nord-de-France F-59000, Lille, France, OLIVIER GUAITELLA, ANTOINE ROUSSEAU, Laboratoire de Physique des Plasmas, Ecole Polytechnique UMR CNRS 7648, 91120 Palaiseau, France — Inorganic adsorbing materials are used for volatile organic compound (VOC) removal and subsequently indoor air purification. Authors focused on the regeneration of saturated adsorbing materials using surface dielectric barrier discharge exposure. Two main objectives are targeted: (i) oxidation of the adsorbed VOC; (ii) regeneration of the sorbent surface for further adsorption. Isopropanol is used as model VOC and TiO₂ thin film as model inorganic sorbent. First, adsorption properties of TiO₂ are characterized under dry and wet (RH=50%) air. Secondly, regeneration of the surface is investigated as a function of various parameters: (i) input power; (ii) nature of the gas stream (air, O₂, N₂); (iii) relative humidity. By-products and reaction intermediates formed during the regeneration process are monitored on-line by FTIR. The nature of the by-products and the process efficiency is discussed according to the process parameters. Carbon balances of the process are discussed.

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