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Transient Species in Plasmas Interacting with Liquids S. REUTER, A. SCHMIDT-BLEKER, J. H. VAN HELDEN, H. JABLONOWSKI, J. WINTER, INP Greifswald e.V., J. SANTOS SOUSA, Univ. Paris-Sud, Universit Paris-Saclay, M. GIANELLA, G. RITCHIE, Department of Chemistry, University of Oxford, United Kingdom, K.-D. WELTMANN, INP Greifswald e.V. — Processes of non-equilibrium plasmas at gas-liquid interfaces are determined by transient species. Quantification of these species in the plasma, gas, or liquid is intricate and requires specific diagnostics. In order to study plasma-liquid interaction processes, novel diagnostic concepts need to be developed combined with simulations that allow an insight into the chemical reaction pathways. Significantly relevant transient species in plasmas operated in ambient air include HO_2 and $O_2(a^1\Delta)$, which are diagnosed in this work. The aim is to link localized transient species with longer living stable species in the gas phase and in the liquid phase. Understanding reaction pathways makes it possible to control the reactive species composition generated by the cold plasmas, and further insight into plasma induced reactivity in condensed matter systems can be gained. The work shows a combination of absorption spectroscopic methods and other diagnostic techniques as well as simple kinetics modeling as a way to control the plasma chemical reactions.

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