

Abstract Submitted
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Mass identification of the neutral products generated in the plasma treatment of polluted atmospheres DAVID SEYMOUR, Hiden Analytical — Plasmas produced using Dielectric Barrier Discharge (DBD) devices are very effective in the abatement of air pollution resulting from, for example, the emission of volatile organic compounds (VOCs) by a range of industrial and agricultural processes. The development and monitoring of effective DBD systems can be investigated by advanced mass spectrometric methods specifically configured for analysis at high and atmospheric pressures. The present work involves the operation of a small DBD reactor which uses either a helium or nitrogen carrier gas to sustain the plasma to which may be added reactive gases, such as oxygen, as well as samples of pollutants such as chlorinated hydrocarbons, including trichloroethylene. The mass spectrometric analysis was performed using a specially configured system manufactured by Hiden Analytical Ltd. The DBD source may also be combined with a catalyst for plasma-enhanced catalysis. The neutral products of the reactions proceeding in the plasma at atmospheric pressure are sampled through the capillary sampling system which also reduces the pressure of the gas mixture delivered to the ionisation source of the quadrupole mass spectrometer. The ions produced are subsequently mass identified. We describe typical data and comment on the advantages of this technique.

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