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Conversion of volatile organic compounds in a twin surface dielectric barrier discharge[1] LARS SCHUECKE, JAN-LUCA GEMBUS, NIKLAS PETERS, MARTIN MUHLER, PETER AWAKOWICZ, Ruhr University Bochum
— In consideration of the increasing consciousness for environmental protection, energy efficient processes for purification of polluted gas streams, e.g. in industrial plants or living space, are growing in demand. These gas streams can be contaminated with pollutants such as numerous hydrocarbons and other chemicals, which are known to be detrimental to the environment and human health. A novel twin surface dielectric barrier discharge for the conversion of volatile organic compounds from gas streams is studied regarding its electrical discharge parameters, power efficiency, gas phase chemistry, and conversion of frequently used hydrocarbons and other chemical pollutants. To this end, techniques such as flame ionization detectors, as well as online gas chromatography-mass spectrometry are used amongst others, to gain insight into the occurring gas-phase chemistry, possible reaction pathways, and advantages of the presented discharge over comparable techniques.

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