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## **Energy balance of a diffuse coplanar surface barrier discharge (DCSBD)**

Lukas Rosenfeldt, Luka Hansen, Kristian Reck, Holger Kersten

Christian-Albrechts-Universität zu Kiel, Kiel, Germany

rosenfeldt@physik.uni-kiel.de

For many industrial applications atmospheric pressure plasmas are of great interest as they can be easily integrated into existing processes and allow the treatment of surfaces without vacuum equipment [1-2]. In particular, Dielectric barrier discharges (DBDs) and diffuse coplanar surface barrier discharges are suited for numerous types of surface treatment including cleaning, oxidation and surface activation [3-5]. While efforts have been made to characterize such a setup with various diagnostics [6-7] it is not fully understood yet. For this purpose combined measurements of energy flux, current and voltage signals of the discharge, as well as the temperature of the oil cooling were carried out. These diagnostics were complemented by optical emission spectroscopy (OES). For the energy flux a passive thermal probe (PTP) described in [8] was used and the gas temperatures were confirmed by OES. By measuring the temperature at inlet and outlet of the cooling system the power absorbed in the oil could be estimated. Thus, the power delivered to a substrate and the power dissipated in the cooling system could be compared with the electrical input power. By performing the measurements simultaneously, the energy balance of a DCSBD could be obtained.

### References

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### Keywords

DCSBD

DBD

energy flux

thermal probe