Karlsruhe Institute of Technology

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http://www.istm.kit.edu

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Master's Thesis – experimental

Electrode Aging During Long-Term Operation of Electroaerodynamic Thrust Devices

Task description

As part of the EU project "IPROP - Ionic PROPulsion in Atmosphere", current research effort at ISTM revolves around the evaluation and quantification of electroaerodynamic thrust devices, based on the principle of corona discharge. To be suitable for real-world application, the electrodes must be able to last for long durations without significant degradation. This is to be studied with various electrode materials.
Additional details about the project: https://www.istm.kit.edu/projekte_2015.php

Work plan

- Literature research: electroaerodynamic thrust, particle image velocimetry
- Design of an experimental plan, study and selection of materials and measurement techniques, e.g.: electrical quantities, force, velocity field, optical analysis
- Execution and evaluation of experiments
- Analysis of degradation behavior and its contributing factors

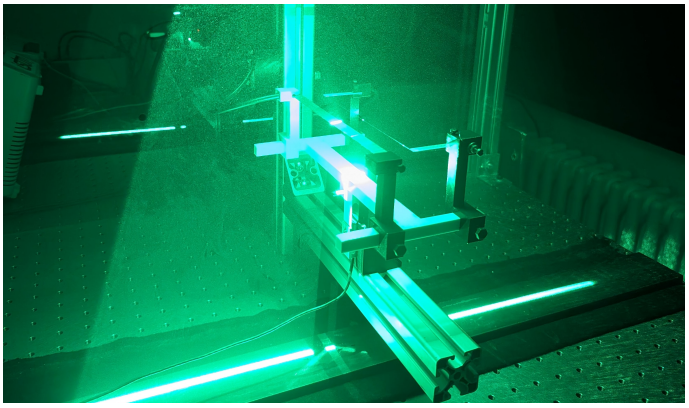

Figure 1: Experimental setup for velocity field measurement in the vicinity of an electroaerodynamic thrust device

Requirements

Good understanding of fluid mechanics

Beneficial Skills

Experience in experimental fluid mechanics
Knowledge of data acquisition using Labview and data analysis using Python/Matlab

Start: immediately

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