

## Title of the contribution

Marios Kotsonis<sup>1</sup>, Nicolas Benard<sup>2</sup>, Eric Moreau<sup>2</sup>

<sup>1</sup>*Faculty of Aerospace Engineering, Delft University of Technology, The Netherlands*  
E-mail: m.kotsonis@tudelft.nl

<sup>2</sup>*Institute PPrime, Universite de Poitiers, France*

E-mail: nicolas.benard@univ-poitiers.fr, eric.moreau@univ-poitiers.fr

**Keywords:** Keyword1, keyword2, keyword3.

Here is the body of the abstract. Please summarize the motivations of the contribution, the methodology used, the main results achieved (including important equations and representative figures to highlight the main achievement). Acknowledgements and selected references have to be placed at the end. Please contain all the text in two pages.

Please send the abstract to Ms. Colette Russo by e-mail: c.j.j.russo@tudelft.nl

An example of text to be edited is provided below.

Aristotle introduces the concept of  $\delta\ \sigma\acute{\upsilon}\ \chi\iota\nu\acute{o}\mu\epsilon\nu\omicron\nu\ \chi\iota\nu\epsilon\acute{\iota}$  (*the unmoved mover*) in his Metaphysics treatise [1]. As implied by the name, the unmoved mover is the one that can move others while itself stays still. A modern equivalent is the technology of plasma actuators [2, 3] (Fig.1). They have received overwhelming attention from the flow control community during the past 15 years. This is mainly attributed to their inherent features, which render them ideal for active flow control. They are relatively easy to manufacture, operate with low power consumption, exhibit high frequency response and, as modern unmoved movers, have no moving parts. On the other hand their flow control authority is still limited and efficient scaling to operation at high Reynolds numbers is challenging. The improvement of plasma actuator performance has been one of the major driving factors behind the vast number of characterization studies published.

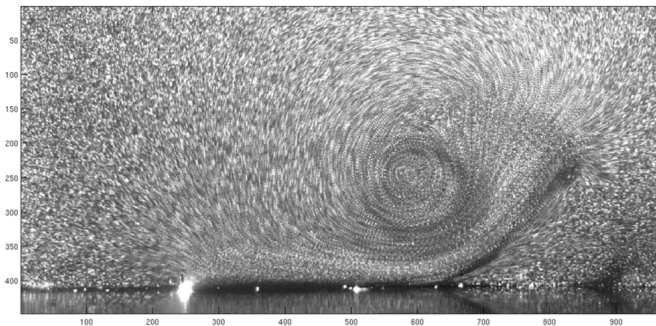


Figure 1: Example of smoke visualization of plasma actuator.

Several variations of plasma actuators exist such as non- thermal Alternating Current Dielectric Barrier Discharge (AC-DBD) [4], Direct Current corona (DC-corona) [5], nanosecond pulsed Di-

electric Barrier Discharge (ns-DBD) [6], and arc-filament actuators [7]. This review is focused on experimental diagnostics for characterization of AC-DBD, DC-corona and ns-DBD actuators.

#### *Acknowledgements*

The research leading to these results has received funding from the Dutch Foundation for Scientific Research (NWO) under the Veni grant.

#### *References*

- [1] Aristotle. *Metaphysics*.
- [2] T. C. Corke, C. L. Enloe, and S. P. Wilkinson. Dielectric barrier discharge plasma actuators for flow control. *Annu. Rev. Fluid Mech.*, 42:505–529, 2010.
- [3] N Benard and E. Moreau. Electrical and mechanical characteristics of surface ac dielectric barrier discharge plasma actuators applied to airflow control. *Experiments*, 55(1846), 2014.
- [4] J. Roth, Daniel Sherman, and Stephen Wilkinson. *Boundary layer flow control with a one atmosphere uniform glow discharge surface plasma*. American Institute of Aeronautics and Astronautics, 2013/08/21 1998.
- [5] L. Leger, E. Moreau, and G. Touchard. Control of low velocity airflow along a flat plate with a dc electrical discharge. In *Industry Applications Conference, 2001. Thirty-Sixth IAS Annual Meeting. Conference Record of the 2001 IEEE*, volume 3, pages 1536–1543, 2001.
- [6] D. V. Roupasov, A. A. Nikipelov, M. M. Nudnova, and A. Y. Starikovskii. Flow separation control by plasma actuator with nanosecond pulse periodic discharge. In *46th AIAA Aerospace Sciences Meeting and Exhibit*, 2008.
- [7] M. Samimy, I. Adamovich, B. Webb, J. Kastner, J. Hileman, S. Keshav, and P. Palm. Development and characterization of plasma actuators for high-speed jet control. *Experiments in Fluids*, 37(4):577–588, 2004.