

Study of atmospheric pressure radiofrequency Ar/O₂ plasma afterglow used for PTFE surface modification

Citation for published version (APA):

Duluard, C. Y., Dufour, T., Carbone, E. A. D., & Reniers, F. (2010). Study of atmospheric pressure radiofrequency Ar/O₂ plasma afterglow used for PTFE surface modification. In W. G. G. M. Hori, & X. Japan Society of Applied Physics (Eds.), *Proceedings of the 63rd Gaseous Electronics Conference and 7th International Conference on Reactive Plasmas, Paris, France, 4-8 October 2010* (pp. CTP.00129-). GEC.

Document status and date:

Published: 01/01/2010

Document Version:

Publisher's PDF, also known as Version of Record (includes final page, issue and volume numbers)

Please check the document version of this publication:

- A submitted manuscript is the version of the article upon submission and before peer-review. There can be important differences between the submitted version and the official published version of record. People interested in the research are advised to contact the author for the final version of the publication, or visit the DOI to the publisher's website.
- The final author version and the galley proof are versions of the publication after peer review.
- The final published version features the final layout of the paper including the volume, issue and page numbers.

[Link to publication](#)

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal.

If the publication is distributed under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license above, please follow below link for the End User Agreement:

www.tue.nl/taverne

Take down policy

If you believe that this document breaches copyright please contact us at:

openaccess@tue.nl

providing details and we will investigate your claim.

Abstract Submitted
for the GEC10 Meeting of
The American Physical Society

Sorting Category: 2.12 (E)

Study of atmospheric pressure radiofrequency Ar/O₂ plasma afterglow used for PTFE surface modification CORINNE DULUARD, THIERRY DUFOUR, EMILE CARBONE, FRANÇOIS RENIERS, Université Libre de Bruxelles, Faculté des Sciences, Chimie Analytique et Chimie des Interfaces — Polytetrafluoroethylene (PTFE) is a hydrophobic polymer, the surface energy of which can be tailored by plasma treatment to increase its adhesion properties or to enhance its hydrophobicity, for example for biocompatible applications. Superhydrophobic behavior was obtained by low pressure O₂ plasma treatment, and was attributed to surface roughening due to strong etching by O₂ plasma. Recently, an increase in hydrophobicity has also been observed after treatment in the afterglow of an atmospheric pressure radiofrequency Ar/O₂ plasma with up to 0.1% O₂ in the feed gas. To get a better understanding of the mechanisms responsible for PTFE surface modification, the Ar/O₂ plasma afterglow is characterized by spatially resolved optical emission spectroscopy and mass spectrometry. The influence of gas flow rate, power and substrate-to-electrode distance on the plasma properties is evaluated, and correlated with the change of PTFE surface energy and surface composition, determined by water contact angle measurements and X-ray photoelectron spectroscopy respectively.

Corinne Duluard
cduluard@ulb.ac.be

Université Libre de Bruxelles, Faculté des Sciences,
Chimie Analytique et Chimie des Interfaces

Prefer Oral Session
 Prefer Poster Session

Date submitted: 12 Jun 2010

Electronic form version 1.4