

## Plasma particle lofting

***Citation for published version (APA):***

Heijmans, L. C. J., & Nijdam, S. (2015). Plasma particle lofting. In *68th Annual Gaseous Electronics Conference/9th International Conference on Reactive Plasmas/33rd Symposium on Plasma Processing, 12-16 October 2015, Honolulu, Hawaii* (Bulletin of the American Physical Society; Vol. 60, No. 9). American Physical Society.

***Document status and date:***

Published: 12/10/2015

***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.

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Abstract Submitted  
for the GEC15 Meeting of  
The American Physical Society

**Plasma Particle Lofting** LUCAS HEIJMANS, SANDER NIJDAM,  
Eindhoven University of Technology — In plasma particle lofting, macroscopic particles are picked up from a surface by an electric force. This force originates from a plasma that charges both the surface and any particle on it, leading to an electric force that pushes particles off the surface. This process has been suggested as a novel cleaning technique in modern high-tech applications, because it has intrinsic advantages over more traditional methods. Its development is, however, limited by a lack of knowledge of the underlying physics. Although the lofting has been demonstrated before, there are neither numerical nor experimental quantitative measures of it. Especially determining the charge deposited by a plasma on a particle on a surface proves difficult. We have developed a novel experimental method using a “probe force.” This allows us to, for the first time, quantitatively measure the plasma lofting force. By applying this method to different plasma conditions we can identify the important plasma parameters, allowing us to tailor a plasma for specific cleaning applications. Additionally, the quantitative result can help in the development of new models for the electron and ion currents through a plasma sheath.

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Date submitted: 17 Jun 2015

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