

Hydrogen atom and ion source

Citation for published version (APA):

Severens, R. J., de Graaf, M. J., Qing, Z., Otorbaev, D. K., Dahiya, R. P., Wevers, J. C. A., Meulenbroeks, R. F. G., van de Sanden, M. C. M., & Schram, D. C. (1993). *Hydrogen atom and ion source*. Abstract from 46th Annual Gaseous Electronics Conference, Montreal, Quebec, Canada.

Document status and date:

Published: 01/01/1993

Document Version:

Accepted manuscript including changes made at the peer-review stage

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.

46th Annual Gaseous Electronics Conference

19-22 October 1993 • Montréal, Québec

PLEASE TYPE NAME, ADDRESS,
TELEPHONE NUMBER
AND E-MAIL

Prof.dr.ir. D.C. Schram
Eindhoven University of
Technology
Department of Physics
P.O. Box 513
5600 MB Eindhoven
The Netherlands
Tel: (+3140)474369
E-mail: schramd@etprs.phys.tue.nl

AUTHORS: PLEASE NOTE

Indicate topic(s) covered in the paper by selecting a letter and a digit from the attached list. If more than one, present in order of importance.

Letter	Digit

Special request:

Preferred mode
of presentation

- Poster
Lecture
Either

DO NOT WRITE IN THE
SPACE BELOW

Serial No. _____

Accepted: Yes No

Session _____

Conf. Date _____

Hydrogen Atom and Ion Source, R.J. SEVERENS,
M.J. DE GRAAF, Z. QING, D.K. OTORBAEV,
R.P. DAHIYA, J. WEVERS, R.F.G. MEULENBROEKS,
M.C.M. VAN DE SANDEN, and D.C. SCHRAM, EUT –
High intensity hydrogen atom and ion beams can be obtained
by expansion of a cascade arc plasma in a low pressure vessel.
At intermediate ambient pressure anomalous recombination
results from charge exchange of H^+ with H_2^v to H_2^+ , conversion
to H_3^+ and subsequent dissociative recombination. The required
 H_2^v reenters the atomic plasma beam from wall association and
recirculation. At lower pressure (10 Pa) in a confining magnetic
field this recombination is much less effective and a highly
ionised plasma beam results; then the ro-vibrational excitation
of the residual $H_2^{v,r}$ molecules favour negative ion formation.
Applications in ion sources and archeological artefact
restoration are discussed.