

NATIONAL FUSION RESEARCH INSTITUTE

Plasma Technology Research Center, 37 Dongjangan-ro, Gunsan, Jeollabuk-do, 54004, Korea

DR. JUNG-SIK YOON

Telephone : +82-63-440-4030

Telefax : +82-63-466-7001

E-mail : jsyoon@nfri.re.kr

1. Education

- Ph. D. : Department of Physics, Hanyang University, Korea, February, 2000
 - Dissertation: *Atomic collisional processes in plasmas*
 - Supervisor: Prof. Young-Dae Jung
- M. S.: Department of Physics, Hanyang University, Korea, August, 1996
 - Thesis : *Spherical versus non-spherical plasma-screening effects on semiclassical electron-ion collisional excitations in strongly coupled plasmas*
 - Supervisor: Prof. Young-Dae Jung
- B. S. : Department of Physics, Hanyang University, Korea, February, 1994

2. Experiences

- January, 2015–present : European Physical Journal D, Editor
- June, 2012–present : IAEA Atomic Data Unit, Data Center Leader
- December, 2014–present : NFRI Plasma Technology Research Center, Deputy Director
- March, 2013–November, 2014 : NFRI Policy Division, Director
- January, 2005–February, 2014 : National Fusion Research Institute, Senior Researcher
 - Basic Plasma Research Team, Leader
 - Convergence Plasma Research Division, Director
- February, 2003–December, 2004 : Korea Basic Science Institute, National Fusion R&D Center, Experimental Research Team, Post Doc.
- January, 2001–January, 2003 : Max-Planck-Institute for Plasma Physics, Bayesian Data Analysis Group, München, Germany, Post Doc.
- November, 1999–December, 2000 : Max-Planck-Institute for the Physics of Complex Systems, Finite Systems, Dresden, Germany, Post Doc.

3. Research interests

- Atomic and molecular collision processes in plasmas
- Data analysis - Bayesian probability theory

4. Book

- Atomic Processes in Basic and Applied Physics, edited by V. Shevelko, H. Tawara (Springer, Berlin), p. 357 (2012).

5. Publication lists (at NFRI)

1. Jonathan Tennyson, Sara Rahimi, Christian Hill, Lisa Tse, Anuradha Vibhakar, Dolica Akello-Egwel, Daniel Brown, Anna Dzarasova, James Hamilton, Dagmar Jaksch, Sebastian Mohr, Keir Wren-Little, Johannes Bruckmeier, Ankur Agarwal, Klaus Bartschat, Annemie Bogaerts, Jean Booth, Matthew Goeckner, Khaled Hassouni, Yukikazu Itikawa, B. Braams, E. Krishnakumar, Annarita Laricchiuta, Nigel Mason, Sumeet Pandey, Zoran Petrovic, Yi-Kang Pu, Alok Ranjan, Shahid Rauf, Julian Schulze, Miles Turner, Peter Ventzek, J. Whitehead, and **Jung-Sik Yoon**, *QDB: a new database of plasma chemistries and reactions*, Plasma Sources Science and Technology, in press (2017).
2. Dhanoj Gupta, Heechol Choi, Deuk-Chul Kwon, **Jung-Sik Yoon**, Bobby Antony, and Song, Mi-Young, *Cross sections for electron collision with difluoroacetylene*, Journal of Physics B, in press (2017).
3. D. Gupta, H. Choi, M.Y. Song, G.P. Karwasz, and **J.-S. Yoon** *Electron impact ionization cross section studies of C_2F_x ($x = 1 - 6$) and C_3F_x ($x = 1 - 8$) fluorocarbon species*, European Physical Journal D, in press (2017).
4. Mi-Young Song, **Jung-Sik Yoon**, Hyuck Cho, Grzegorz P. Karwasz, Viatcheslav Kokoouline, Yoshiharu Nakamura, and Jonathan Tennyson, *Cross Sections for Electron Collisions with Acetylene*, Journal of Physical and Chemical Reference Data, in press (2017).
5. D. W. Kim, S. J. You, J. H. Kim, H. Y. Chang, **J.-S. Yoon** and W. Y. Oh, *Measurement of effective sheath width around the cutoff probe based on electromagnetic simulation*, Physics of Plasmas **23**, 053516 (2016).
6. D. W. Kim, S. J. You, J. H. Kwon, K. H. You, B. H. Seo, J. H. Kim, **J.-S. Yoon** and W. Y. Oh, *Reproducibility of the cutoff probe for the measurement of electron density*, Physics of Plasmas **23**, 063501 (2016).
7. Mi-Young Song, **Jung-Sik Yoon**, Hyuck Cho, Yukikazu Itikawa, Grzegorz P. Karwasz, Viatcheslav Kokoouline, Yoshiharu Nakamura, and Jonathan Tennyson, *Cross Sections for Electron Collisions with Methane*, Journal of Physical and Chemical Reference Data **44**, 023101 (2015).

8. Mi-Young Song, **Jung-Sik Yoon**, and Young-Dae Jung,
Influence of renormalization shielding on the electron-impact ionization process in dense partially ionized plasmas, Physics of Plasmas **22**, 042709 (2015).
9. Mi-Young Song, **Jung-Sik Yoon**, and Young-Dae Jung,
Influence of electron-neutral collisions on the Compton scattering cross section and the Salpeter structure factor in warm collisional plasmas, Physics of Plasmas **22**, 034502 (2015).
10. **Jung-Sik Yoon**, Mi-Young Song, Deuk-Chul Kwon, Heechol Choi, Chang-Geun Kim, Vijay Kumar,
Electron impact cross sections of vibrationally and electronically excited molecules, Physics Reports **543**, 199 (2014).
11. Deuk-Chul Kwon, Mi-Young Song and **Jung-Sik Yoon**,
A semi-analytic collisionless sheath model for multicomponent plasmas and ion energy and angular distributions at rf-biased electrodes, Journal of Physics D: Applied Physics **46**, 025202 (2013).
12. V.P. Shevelko, M.-Y. Song, I.Yu. Tolstikhina, H. Tawara, **J.-S. Yoon**,
A Cross sections for charge-changing collisions of many-electron uranium ions with atomic and molecular targets, Nuclear Instruments and Methods in Physics Research B **278**, 63 (2012).
13. Deuk-Chul Kwon, and **Jung-Sik Yoon**
Theoretical investigation of phase-controlled bias effect in capacitively coupled plasma discharges, Physics of Plasmas **18**, 073506 (2011).
14. Dae Chul Kim, Mi-Young Song, Yonghyun Kim, Young-Woo Kim, Young Rock Choi, Hyck Cho and **Jung-Sik Yoon**
Electron interactions with plasma processing gases - Progress of magnetized electron-impact total cross section measurement system (ELECS-1), Current Applied Physics **11**, S192, (2011).
15. Jun-Hyung Park, Sung-Ha Hwang, and **Jung-Sik Yoon**
The implementation of web based plasma properties reference data collection and evaluation system, Transactions of Fusion Science and Technology **60**, 64 (2011).
16. Sung-Ha Hwang, Jun-Hyung Park, and **Jung-Sik Yoon**
The design of technology information search system for national fusion reactor based on RDF/XML, Transactions of Fusion Science and Technology, **60**, 102 (2011).
17. D. C. Kwon, W. S. Chang, M. Park, D. H. You, M. Y. Song, S. J. You, Y. H. Im and **J.-S. Yoon**
A self-consistent global model of solenoidal-type inductively coupled plasma discharges including the effects of radio-frequency bias power, Journal of Applied Physics, **109**, 073311 (2011).
18. **Jung-Sik Yoon**, Mi-Young Song, Deuk-Chul Kwon, and Won-Seok Chang
Recent data research activities on basic plasma research in Korea, AIP Conf. Proc. **1344**, 197 (2011).
19. Young-Woo Kim, Yonghyun Kim, Daechul Kim, Jong-Sik Kim, **Jung-Sik Yoon** and Bongju Lee

Development and characterization of toroidal magnetron sputtering system for thin film deposition, Thin Solid Films, **518**, 6650 (2010).

20. **Jung-Sik Yoon**, Young-Woo Kim, Deuk-Chul Kwon, Mi-Young Song, Won-Seok Chang, Chang-Geun Kim, Vijay Kumar and BongJu Lee
Electron-impact cross sections for deuterated hydrogen and deuterium molecules, Reports on Progress in Physics, **73**, 116401 (2010).
21. **Jung-Sik Yoon**, Mi-Young Song, H. Kato, M. Hoshino, H. Tanaka, M. J. Brunger, S. J. Buckman, and H. Cho
Elastic cross sections for electron collisions with molecules relevant to plasma processing, Journal of Physical and Chemical Reference Data, **39**, 033106 (2010).
22. H. Cho, M. Y. Song, **J.-S. Yoon**, M. Hoshino and H. Tanaka
Elastic electron scattering from CF_3H and CF_3I , Journal of Physics B, **43**, 135205 (2010).
23. **Jung-Sik Yoon**, Mi-Young Song and Young-Woo Kim
Quantum mechanical effects on elastic electron-ion collisions in dense, high-temperature plasmas using the eikonal approximation, Transactions of Fusion Science and Technology, **55**, 71 (2009).
24. Jong-Ha Lee, Won-Ha Ko, Dong-Cheol Seo, Young-Woo Kim and **Jung-Sik Yoon**
He I line intensity ratio method for electron density and temperature measurements in Multi-Purpose Plasma (MP^2), Transactions of Fusion Science and Technology, **55**, 100 (2009).
25. C. G. Kim, G. W. Bahng, J. C. Ahn, K. S. Chae, J. K. Park and **J.-S. Yoon**
Development and distribution of standard reference data on physical and chemical properties of plasma, Transactions of Fusion Science and Technology, **55**, 191 (2009).
26. V. P. Shevelko, M. S. Litsarev, M.-Y. Song, H. Tawara and **J.-S. Yoon**
Electron loss of fast many-electron ions colliding with neutral atoms: possible scaling rules for the total cross sections, Journal of Physics B, **42**, 065202 (2009).
27. V. P. Shevelko, D. Kato, M.-Y. Song, H. Tawara, I. Yu. Tolstikhina, and **J.-S. Yoon**
One-electron capture and target-ionization in He^+ -neutral-atom collisions, Nuclear Instruments and Methods in Physics Research B, **267**, 3395 (2009).
28. M.-Y. Song, M. S. Litsarev, V. P. Shevelko, H. Tawara and **J.-S. Yoon**
Single- and multiple-electron loss cross-sections for fast heavy ions colliding with neutrals: Semi-classical calculations, Nuclear Instruments and Methods in Physics Research B, **267**, 2369 (2009).
29. H. Kato, H. Kawahara, M. Hoshino, M. C. Garcia, S. J. Buckman, M. J. Brunger, L. Campbell, H. Cho, Y.-K. Kim, **J.-S. Yoon**, M.-Y. Song, D. Kato, I. Murakami, T. Kato and H. Tanaka,
Cross sections and oscillator strengths for electron-impact excitation of electronic states in poly-atomic molecules-Application examples of the BEf-scaling model in optically allowed transitions, NIFS-DATA Series **108**, 1 (2009).
30. **Jung-Sik Yoon**, Mi-Yung Song, Jeong-Min Han, Sung-Ha Hwang, Won-Seok Chang, and BongJu Lee
Cross sections for electron collisions with hydrogen molecules, Journal of Physical and Chemical Reference Data, **37**, 913 (2008).

31. Hyun-Jong Woo, Kyu-Sun Chung, Hyun-Jong You, Myoung-Jae Lee, Taihyeop Lho, Kwon Kook Choh, **Jung-Sik Yoon**, Yong Ho Jung, DongJu Lee, Suk Jae Yoo and Myeon Kwon
Honeycomblike large area LaB₆ plasma source for Multi-Purpose Plasma facility, Review of Scientific Instruments, **78**, 103505 (2007).
32. Y. H. Jung, **J.-S. Yoon**, S. J. Yoo, Y.-W. Kim, T. Lho, B. Lee, J.-J. Do, H.-J. Woo and K.-S. Chung
Determination of plasma density and temperature from intensity ratios of He I emission lines in Diversified Plasma Simulator (DiPS), Contrib. Plasma Phys., **46**, 470 (2006).
33. Dong-Cheol Seo, Hoon-Kyun Na and **Jung-Sik Yoon**
Tomographic reconstruction of hydrogen neutral density profiles in the Hanbit magnetic mirror device, Journal of the Korean Physical Society, **49**, S128 (2006).
34. Jong-Ha Lee and **Jung-Sik Yoon**
Reconstruction of effective charge from spectroscopic bremsstrahlung measurement in the Hanbit magnetic mirror device by using Bayesian probability theory, Journal of the Korean Physical Society, **49**, S211 (2006).
35. **Jung-Sik Yoon**, Yong Ho Jung, Taihyeop Lho, BongJu Lee, and Sang-Ho Lee
Construction of an Atomic and Molecular Database for a Plasma, Sae Mulli (The Korean Physical Society), **50**, 26 (2005).
36. **Jung-Sik Yoon**, Dong-Cheol Seo and Hoon-Kyun Na
Tomographic reconstruction of H_{α} emissivity profiles in Hanbit magnetic mirror device, Review of Scientific Instruments, **76**, 013502 (2005).
37. **Jung-Sik Yoon**, Yong Ho Jung, Taihyeop Lho, Suk-Jae Yoo, BongJu Lee, and Sang-Ho Lee
The influence of quantum effects on inelastic ion-ion collisional excitations in dense, high-temperature plasmas, New Journal of Physics, **7**, 56 (2005).
38. **Jung-Sik Yoon**, Taihyeop Lho, Yong Ho Jung, BongJu Lee and Suk-Jae Yoo
Plasma screening effects on electron-impact single ionization of helium-like ions in dense plasmas, Journal of the Korean Physical Society, **46**, 855 (2005).
39. **J.-S. Yoon**, D.-C. Seo, H.-K. Na and S.-W. Yoon
Reconstruction of neutral hydrogen density profiles in Hanbit magnetic mirror device using Bayesian probability theory, Transactions of Fusion Science and Technology, **47**, 273 (2005).
40. S. W. Yoon, S. S. Kim, B. H. Park, J. G. Bak, **J. S. Yoon**, D. C. Seo
Neutral transport and particle balance in Hanbit magnetic mirror device Transactions of Fusion Science and Technology, **47**, 175 (2005).
41. D. C. Seo, H. K. Na, **J. S. Yoon** and S. W. Yoon
Measurements of wall recycling coefficient in the Hanbit mirror device, Transactions of Fusion Science and Technology, **47**, 318 (2005).
42. **Jung-Sik Yoon**, Rainer Fischer, Silvio Gori and Jens Knauer,
Bayesian data analysis for fusion diagnostics, Journal of the Korean Physical Society, **45** (2004).