Verkleg eðlisfræði:

Greina og skýrsluskrif

Kafli 1

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1. vika vor 2021

Inngangur

- Greinar og skýrslur eru verkfærið sem notað er til að koma á framfæri nýjum uppgötvunum í vísindum
- Greinar og skýrslur fylgja staðlaðri uppbyggingu
- Tilvitnanir í fyrri verk fylgir líka stöðluðum venjum sem að einhverju leyti ræðst af fagsviðum
- Gröf þurfa að vera á tilteknu formi og fylgja tilteknum reglum

Uppbygging greinar

- Tilraunagrein samanstendur almennt af fimm köflum
  - **Abstract**
  - **Introduction**
  - **Experimental apparatus and method**
  - **Results**
  - **Discussion**
  - **Conclusion**

Uppbygging greinar

- Fræðileg grein samanstendur almennt af fimm köflum
  - **Abstract**
  - **Introduction**
  - **Model description** eða **Theory**
  - **Results**
  - **Discussion**
  - **Conclusion**

Uppbygging greinar

- **Abstract**
  - Samantekt um hvað gert var, hverjar eru helstu niðurstöðurnar, og hvað er nýtt
  - Þarf að vera mjög hnitmiðað
  - Inniheldur allar helstu niðurstöður – líka tölulegar niðurstöður

Uppbygging greinar

- **Introduction** - Inngangur
  - Hefst á því að tengja viðkomandi rannsókn við stóru myndina – 2 til 3 setningar
  - Ýtarleg en hnitmiðuð samantekt á því sem að gert hefur verið í eins eða svipuðum rannsóknum
  - Yfirlýsing um hvað er verið að gera með þessari rannsókn sem er nýtt og hvernig það bætir við núverandi þekkingu

Uppbygging greinar

- **Experimental apparatus and method**
  - Fjallað er um uppsetningu tilraunar og þær aðferðir sem notaðar eru
  - Hér eru líka rædd þau fræði og jöfnur sem beitt er við úrvinnslu gagna
  - Lýsing á tilraunauppstillingunni á að innhalda nægilega miklar upplýsingar til að hægt sé að endurtaka tilraunina
    - Hvaða tæki eru notuð
    - Allir helstu stærðir – stærðir, hitastig, þrýstingur o.s.frv.

Uppbygging greinar

- **Model description** eða **Theory**
  - Fjallað er um uppbyggingu líkans sem notað er eða að fræðin sem beitt er eru undirbyggð
  - Lýsingin á líkani og stærðum sem notaðar eru þarf að vera nægilega nákvæm til að lesandinn geti sett upp eigið líkan til að endurtaka reikningana
  - Fyrir tölulega reikninga þarf að vera lýsing á forriti sem notað er og öllum upphafsgildum og stuðlum sem notaðir eru við reikninga

Uppbygging greinar

- **Results**
  - Hér er farið yfir helstu niðurstöður
  - Flest gröfin eru hér sýnd og rædd
  - Það þarf að vísa í öll gröf úr texta
  - Texti undir mynd (figure caption) þarf að vera ítarlegur. Stundum öðlast myndin og myndatextinn sjálfstætt líf.

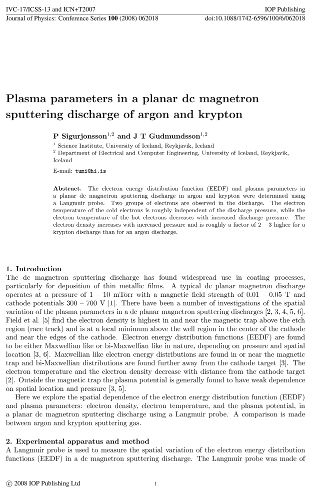
Uppbygging greinar

- **Discussion**
  - Hér er fjallað um niðurstöðurnar og þær bornar saman við hvað aðrir hafa séð
    - ∗ Hvað er öðruvísi og hvers vegna ?
  - Hér má líka líta fram á veginn, hvað hafa niðurstöðurnar í för með sér og hver geta verið næstu skref
  - Oft er köflunum **Results** og **Discussion** slegið saman í **Results and discussion**

Uppbygging greinar

- **Conclusion** eða **Summary**
  - Samantekt um hvað gert var og hverjar eru helstu niðurstöðurnar
  - Inniheldur allar helstu niðurstöður

Uppbygging greinar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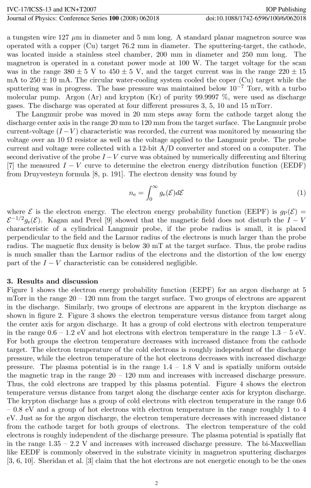
Journal of Physics: Conference Series 100 (2008) 062018 doi:10.1088/1742-6596/100/6/062018

Plasma parameters in a planar dc magnetron sputtering discharge of argon and krypton

P Sigurjonsson[1,2] and J T Gudmundsson[1,2]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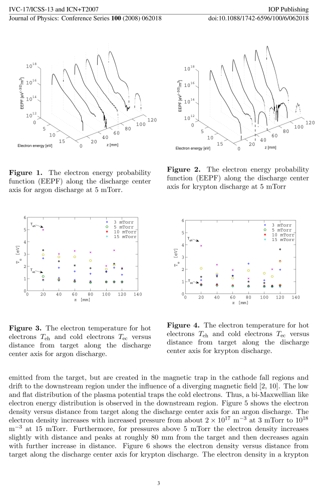
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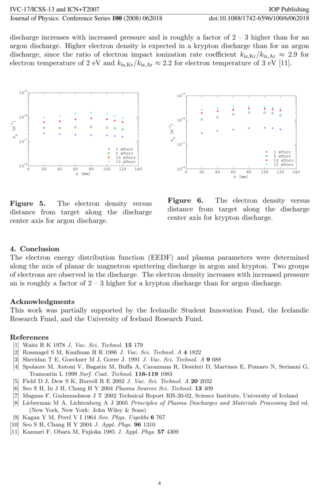
Journal of Physics: Conference Series 100 (2008) 062018 doi:10.1088/1742-6596/100/6/062018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Journal of Physics: Conference Series 100 (2008) 062018 doi:10.1088/1742-6596/100/6/062018

Frá Sigurjonsson and Gudmundsson (2008)

Tilvitnanir

- Það eru all margar skilgreindar staðlaðar leiðir til að birta lista af greinum og bókum sem vitnað er í úr greinum eða skýrslum
- Fyrir *Journal of Physics: Conference Series* notar `vancouver` eða `harvard` staðalinn
- Í `vancouver` þá eru tilvitnanir númeraðar eftir því hvenær þær koma fyrir í textanum
- Í `harvard` er vitnað til greinar undir nafni fyrsta höfundar og ári og tilvitnana listinn er í stafrófsröð

Tilvitnanir–vancouver

1. Introduction

The dc magnetron sputtering discharge has found widespread use in coating processes, particularly for deposition of thin metallic films. A typical dc planar magnetron discharge operates at a pressure of 1 – 10 mTorr with a magnetic field strength of 0.01 – 0.05 T and cathode potentials 300 – 700 V [1]. There have been a number of investigations of the spatial variation of the plasma parameters in a dc planar magnetron sputtering discharges [2, 3, 4, 5, 6]. Field et al. [5] find the electron density is highest in and near the magnetic trap above the etch region (race track) and is at a local minimum above the well region in the center of the cathode

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Frá Sigurjonsson and Gudmundsson (2008)

Tilvitnanir–chicago

for almost 200 years so the literature is rather extensive. Such a discussion can be found in a number of review articles (Druyvesteyn and Penning 1940, Francis 1956, Ingold 1978) and textbooks such as Roth (1995, chapter 9) and Raizer (1991, section 8.1).

As seen in figure 1, the dc glow discharge operates the discharge current range from μA to hundreds of mA (*current*

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Klawuhn E, D'Couto G C, Rymer K A A P, Biberger M A and Levy K B 2000 Ionized physical-vapor deposition using a hollow-cathode magnetron source for advanced metallization *J. Vac. Sci. Technol.* A **18** 1546–9

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Frá Gudmundsson and Hecimovic (2017)

Tilvitnanir–`ieeetr`

A LARGE class of discharges makes use of electron trapping in crossed electric and magnetic fields, for example Hall thrusters [1], [2], magnetized microdischarges [3], and sputtering magnetrons [4]. It has been recognized that ionization and particle transport are governed by a host of waves and instabilities. Recent publications on instabilities in magnetrons focused on high-power impulse magnetron sputtering (HiPIMS); several groups showed pro-

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Frá Anders et al. (2014)

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- Hver skal vera höfundur ?
- International Committee of Medical Journal Editors leggur til að fjögur skilyrði séu uppfyllt:
  1. Substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work; AND
  2. Drafting the work or revising it critically for important intellectual content; AND
  3. Final approval of the version to be published; AND
  4. Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Höfundar – Vancouver reglurnar um höfunda

- In addition to being accountable for the parts of the work he or she has done, an author should be able to identify which co-authors are responsible for specific other parts of the work.
- In addition, authors should have confidence in the integrity of the contributions of their co-authors.
- All those designated as authors should meet all four criteria for authorship, and all who meet the four criteria should be identified as authors.

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- Gæta skal að stafastærðir séu nokkrum punktum stærri en í textanum
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  - og líka í svart hvítu

Gröf

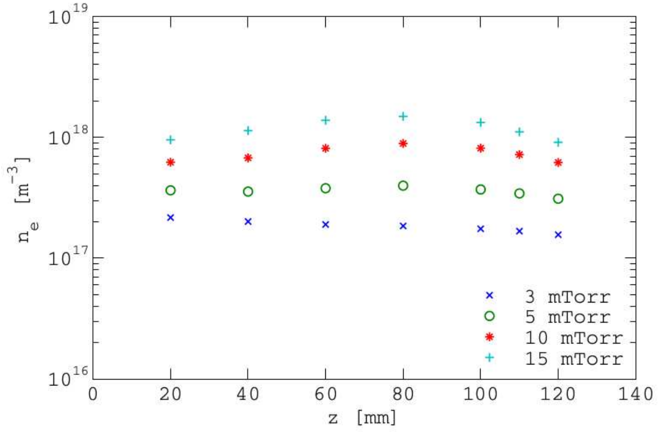

Figure 5. The electron density versus distance from target along the discharge center axis for argon discharge.

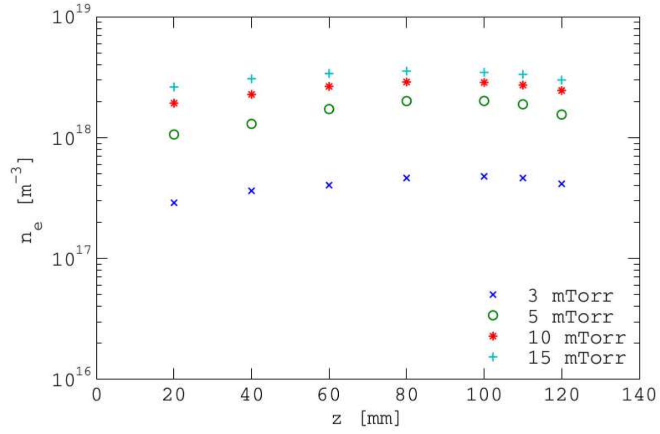

Figure 6. The electron density versus distance from target along the discharge center axis for krypton discharge.

Frá Sigurjonsson and Gudmundsson (2008)

Gröf

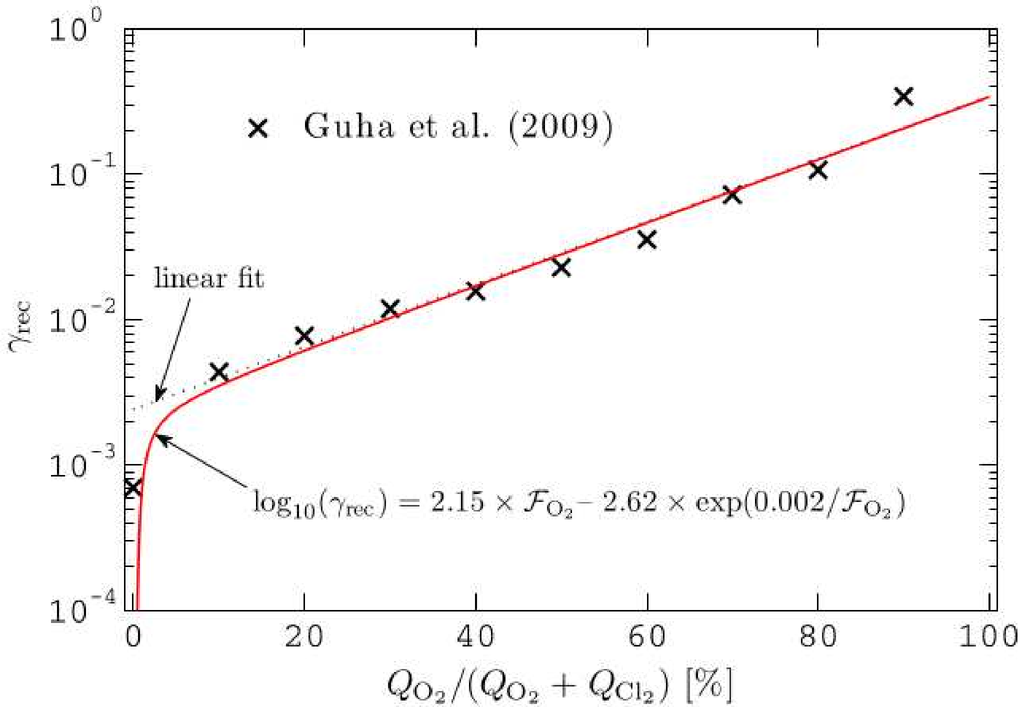

Figure 2. The wall recombination coefficient γ_{rec} for the production of ClO molecules from surface loss of Cl atoms. The experimental data ($\times$) are derived from the measurements of Guha and Donnelly [14, 115].

Frá Thorsteinsson and Gudmundsson (2010)

Gröf

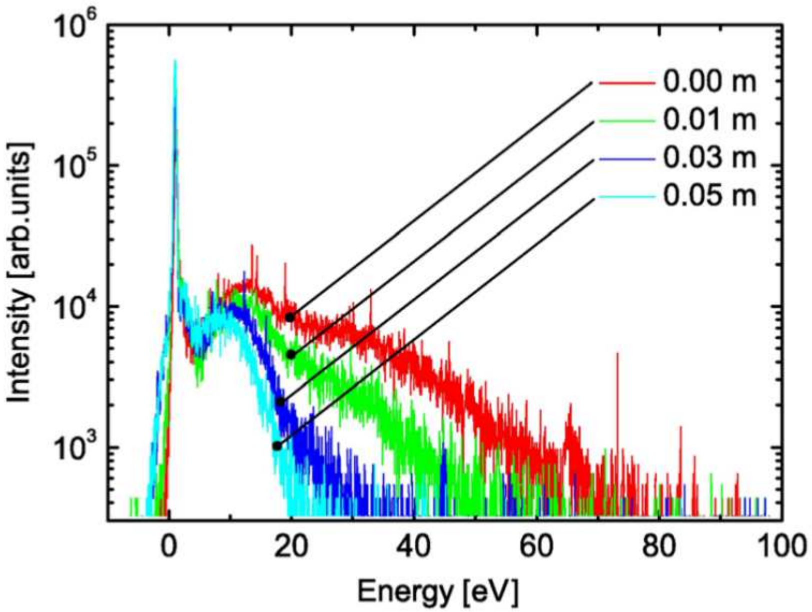

FIG. 10. (Color online) Time averaged ion energy distribution for Ti^+ ions at 0.53 Pa using 500 V HiPIMS pulses for different distances from the target surface. The average ion energy is found to be around 18 eV when measured at the target position. The mass spectrometer was inserted from the side of the chamber (at $z = 0.00$ m). From Lundin *et al.* (Ref. 168).

Frá Gudmundsson et al. (2012)

Gröf

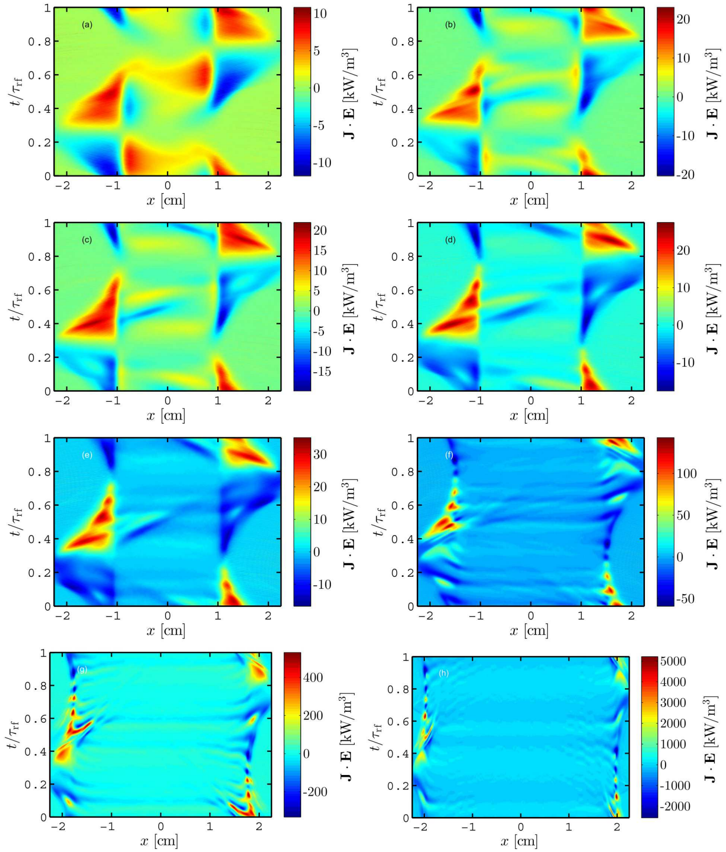

Figure 2. The spatio-temporal behavior of the electron power absorption for driving frequency (a) 12 MHz, (b) 18 MHz, (c) 19 MHz, (d) 19.5 MHz, (e) 20 MHz, (f) 27.12 MHz, (g) 50 MHz, and (h) 100 MHz, for a parallel plate capacitively coupled oxygen discharge at 10 mTorr with a gap separation of 4.5 cm driven by a 222 V voltage source.

Frá Gudmundsson et al. (2018)

Heimildaleit

- Til að leita að upplýsingum er best að nota Web of Science
- Þar má leita undir Topics, Title, Author, Publication name, ... etc
- Web of Science er gagnagrunnur sem inniheldur upplýsingar um greinar sem hafa birst í ritrýndum tímaritum
- Allar greinar eru tengdar greinum sem þær vitna í, sem og greinar sem vitna í þær

Heimildir

Hér er tilvitnun í bók (Batchelor, 2000), bókarkafla (Gudmundsson and Lundin, 2020), doktorsritgerð (Monahan, 2007), greinar (Sigurjonsson and Gudmundsson, 2008) og (Gudmundsson and Hecimovic, 2017), og ráðstefnugrein (Gudmundsson and Thorsteinsson, 2007). Ritalistinn kemur fram með `chicago` stílnum.

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