



Indranil Basu

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WORK EXPERIENCE

Scientific staff (Post-doctoral researcher)

ETH Zurich [01/11/2018 – Current]

City: Zurich

Country: Switzerland

Post-doctoral researcher at **Department of Materials, ETH Zurich**, working on *plasticity mechanisms in magnesium alloys for biomedical implants; Fe-Cr alloys for fusion reactors; Advanced Al-alloys; Multi-material Additive Manufacturing (SFA-AM)*. Advisor: **Prof. Dr. J.F. Löffler**

Academic Research; Research supervision and Teaching (**Co-supervised: 2 Doctoral Students; 2 Masters Students**)

Post-doctoral Scientist

Rijksuniversiteit Groningen [01/05/2016 – 31/10/2018]

City: Groningen

Country: Netherlands

Post-doctoral researcher at **University of Groningen (RUG)**, working on *sub-micron scale residual stress measurements; High Entropy Alloys*. Industrial partners in the project: Philips, Drachten; SKF, Utrecht; Bosch, Tilburg. Advisor: **Prof. Dr. J.T.M. (Jeff) de Hosson**

Academic Research; Research supervision (**Co-supervised 4 Masters Students; 1 Doctoral Student**)

PhD researcher

RWTH Aachen University [01/07/2011 – 30/04/2016]

City: Aachen

Country: Germany

Research Associate at **RWTH Aachen University**, working on *ductility improvement of rare-earth containing wrought magnesium alloys*. PhD candidate at **Institute of Physical Metallurgy and Metal physics (IMM)**, RWTH Aachen University; Doctoral Advisor: **Prof. Dr. rer. nat. h.c. Günter Gottstein**

Academic Research; Teaching and Research supervision (**Supervised 7 Masters students**)

Graduate Research and Teaching assistant

The University of Western Ontario [01/09/2009 – 01/06/2011]

City: London

Country: Canada

Research and Teaching Assistant at **The University of Western Ontario**, working on process-structure *optimization of Magnesium alloy die cast automotive parts*. M.Sc. degree at **The University of Western Ontario (UWO)**, Advisor: **Prof. Dr. Jeffrey T. Wood** [Academic Research](#); [Graduate school](#)

EDUCATION AND TRAINING

PhD in Materials Engineering

RWTH Aachen University [01/08/2011 – 12/12/2016]

Address: Institute of Physical Metallurgy and Metal Physics, Aachen (Germany)

<https://www.imm.rwth-aachen.de>

M.Sc in Mechanical and Materials engineering

The University of Western Ontario [01/09/2009 – 01/06/2011]

Address: Department of Mechanical and Materials Engineering, London (Canada)

<https://www.eng.uwo.ca/mechanical>

B.Tech in Metallurgical and Materials engineering

Indian Institute of Technology, Roorkee [01/07/2005 – 01/06/2009]

Address: Roorkee (India)

LANGUAGE SKILLS

Mother tongue(s):

Bengali, Hindi

English

LISTENING: C2 READING: C2 UNDERSTANDING: C2

SPOKEN PRODUCTION: C2

SPOKEN INTERACTION: C2

German

LISTENING: A2 READING: A2 UNDERSTANDING: A2

SPOKEN PRODUCTION: A2 SPOKEN INTERACTION: A2

SKILLS

Experimental

Additive manufacturing/ Laser powder-bed fusion/ Electron Microscopy / Mechanical Testing / Micro-mechanical testing / Focused Ion Beam / Light microscopy / Electron Backscatter Diffraction / Atom probe tomography

Analytical/Software

MTEX Toolbox / Metallography / OriginPro 90 / Matlab / Microsoft Office / Digital Image Correlation

HONOURS AND AWARDS

Borchers prize

RWTH Aachen University

Doctoral degree with *Summa Cum Laude (Distinction)*

Outstanding reviewer award

Acta/Scripta Materialia

Outstanding reviewer award for Acta Materialia (from 2015-2018) and Scripta Materialia (2017-2020)

Western Graduate Research Scholarship

The University of Western Ontario

Western Graduate Research Scholarship from 2009-2011

Invited Speaker

Materials and Contact Characterization VIII

Invited speaker at Materials and Contact Characterization VIII, Tallinn, Estonia, June 2017

Invited Speaker

ETH Materials Colloquium, Feb 2021

Invited Speaker and Session Chair

Thermec 2023, Topic: Mg alloys and LPSO phases

Invited speaker & session chair at Thermec 2023, Vienna, Austria, July 2023

Early Career Scientist Award (ISMANAM 27 Award)

RQ17/ISMANAM27 conference, August 2023

Awarded to an *outstanding participating scientist who is not older than 35 at the time of the conference.*

Reviewer: Advanced Materials; Acta Materialia; Scripta Materialia; Nature Scientific Reports; Materials Science and Engineering A; Journal of Alloys and Compounds; International Journal of Plasticity; Journal of Materials Science; Materials Science and Technology; Materialia

PRESENTATIONS

Oral Presentation on Additive Manufacturing of Multi-materials at RQ/ISMANAM 2023

Oral Presentation in Swiss Advanced Manufacturing Community Event (SAMCE), Switzerland, 2022

Oral Presentation at TMS-DGM Symposium, March 2021

Oral Presentation at MUL (University of Leoben) - ETH networking meet, Feb 2020

Oral Presentation in 12th BSSM's International Conference on Advances in Experimental Mechanics, Sheffield, UK, Aug 2017

Oral Presentation at M2i Conference and Meeting Materials, Leeuwenhorst, NL, Dec 2017

Oral presentation in 10th International conference on Mg alloys and their applications, Jeju, South Korea, October 2015

Oral presentation at German-Korean (Ge-Ko) workshop 2015, Lüneberg, Germany

Oral presentation at Magnesium Symposium, TMS, San Diego, USA, 2014

Oral presentation at 22nd GLADD seminar, 2013, Max Planck Institute for Iron and Steel (MPIE)

Oral presentation at Light Metals Technology Conference 2013, Windsor, UK

Presented a poster at the THERMEC (2018) conference, Paris, France.

Presented a poster at the annual M2i Conference and Meeting Materials, NL (2016 and 2017)

Presented a poster at the annual APMA-AUTO21 (2011) conference, Ottawa, ON, Canada.

Presented a poster at the annual APMA-AUTO21 (2010) conference, Windsor, ON, Canada. Selected amongst the top 15 posters out of 75 entries.

TEACHING EXPERIENCE

Co-supervision: Practical course on Bachelors research project, ETH Zurich; Teaching Assistant on Thermodynamics and Phase Transformation; Guest Lecturer in Introduction to Materials-II

Teaching assistant /Student-coordinator– Physical Metallurgy (Master's program) at RWTH Aachen, Comprehensive Physical Metallurgy Laboratory course

PEER-REVIEWED PUBLICATIONS (Google Scholar - h-index: 15; i10-index: 19)

1. [Towards high-strength, high-ductility ferritic steels: Pathways to overcome the “475 °C embrittlement” in spinodally decomposed Fe-40Cr alloys](#) [2023]
V. Vojtech, I. Basu, J. M. Wheeler, R. E. Schäublin, J. F. Löffler, **Acta Materialia** (2023), 119355
2. [Twinning induced spatial stress gradients: Local versus global stress states in hexagonal close-packed materials](#) [2023]
H Fidder, I Basu, JTM De Hosson, **Acta Materialia** 256 (2023), 119142
3. [Segregation-driven exceptional twin-boundary strengthening in lean Mg–Zn–Ca alloys](#) [2022]
I Basu, M Chen, J Wheeler, RE Schäublin, JF Löffler, **Acta Materialia** 229 (2022), 117746
4. [Melt Pool Dynamics and Microstructure of Mg Alloy WE43 Under Laser Powder Bed Fusion Additive Manufacturing Conditions](#) [2022]
Julie Soderlind; Aiden Martin; Nicholas Calta; Philip DePond; Jenny Wang; Bey Vrancken; Robin Schaeublin; Indranil Basu; Vivek Thampy; Anthony Y. Fong et al., **Crystals** 2022, 12(10), 1437
5. [Stacking-Fault Mediated Plasticity and Strengthening in Lean, Rare-Earth Free Magnesium Alloys](#) [2021]
I Basu, M Chen, J Wheeler, RE Schäublin, JF Löffler, **Acta Materialia** 211 (2021), 116877
6. [Strengthening mechanisms in high entropy alloys: Fundamental issues](#) [2020]
I. Basu, J.T.M. De Hosson, **Scripta Materialia** 187 (2020) 148-156.
7. [High Entropy Alloys: Ready to Set Sail?](#) [2020]
I. Basu, J.T.M. De Hosson, **Metals** 10(2) (2020) 194
8. [Hierarchical Twinning Induced Texture Weakening in Lean Magnesium Alloys](#) [2019]
I. Basu, T. Al-Samman, **Frontiers in Materials** 6 (187) (2019).
9. [Local stress states & microstructural damage response associated with deformation twins in hexagonal close packed metals](#) [2018]
I. Basu, H. Fidder, V. Ocelík, J. Th.M de Hosson, **Crystals** 8(1) (2018) 1.
10. [BCC-FCC interfacial effects on plasticity and strengthening mechanisms in high entropy alloys](#) [2018]
I. Basu, V. Ocelík, J.Th.M De Hosson, **Acta Materialia** 157 (2018) 83-95.
11. [Size dependent plasticity and damage response in multiphase body centered cubic high entropy alloys](#) [2018]
I. Basu, V. Ocelík, J.T.M. De Hosson, **Acta Materialia** 150 (2018) 104-116.

12. [Size effects on plasticity in high-entropy alloys](#) [2018]
I. Basu, V. Ocelík, J.T.M. De Hosson, **Journal of Materials Research** 33(19) (2018) 3055-76.
13. [Effect of pulse scheme on the microstructural evolution, residual stress state and mechanical performance of resistance spot welded DP1000-GI steel](#) [2018]
A. Chabok, E. van der Aa, I. Basu, J. De Hosson, Y. Pei, **Sci. Tech. Weld. Join.** 23(8) (2018)
14. [Competitive twinning behavior in magnesium and its impact on recrystallization and texture formation](#) [2017]
I. Basu, T. Al-Samman, **Materials Science and Engineering: A** 707 (2017) 232-244.
15. [Measurement of spatial stress gradients near grain boundaries](#) [2017]
I. Basu, V. Ocelík, J.T.M. De Hosson, **Scripta Materialia** 136 (2017) 11-14.
16. [Quantitative estimation of spatial stress gradients from dislocation pile-up at grain boundaries in commercially pure titanium](#) [2017]
I. Basu, V. Ocelík, J.T.M. De Hosson, **The British Society for Strain Measurement**, 2017
17. [Experimental determination and theoretical analysis of local residual stress at grain scale](#) [2017]
I. Basu, V. Ocelik, J.T.M. De Hosson, **WIT Press**, 2017
18. [The role of atomic scale segregation in designing highly ductile magnesium alloys](#) [2016]
I. Basu, K.G. Pradeep, C. Mießen, L.A. Barrales-Mora, T. Al-Samman, **Acta Materialia** 116 (2016) 77-94
19. [Determination of grain boundary mobility during recrystallization by statistical evaluation of electron backscatter diffraction measurements](#) [2016]
I. Basu, M. Chen, M. Loeck, T. Al-Samman, D.A. Molodov, **Mater. Characterization** 117 (2016) 99-112
20. [Twin recrystallization mechanisms in magnesium-rare earth alloys](#) [2015]
I. Basu, T. Al-Samman, **Acta Materialia** 96 (2015) 111-132.
21. [Twinning effects in deformed and annealed magnesium–neodymium alloys](#) [2015]
C. Drouven, I. Basu, T. Al-Samman, S. Korte-Kerzel, **Materials Science and Engineering: A** 647 (2015)
22. [Triggering rare earth texture modification in magnesium alloys by addition of zinc and zirconium](#) [2014]
I. Basu, T. Al-Samman, **Acta Materialia** 67 (2014) 116-133
23. [Deformation, Recrystallization and Grain Growth Behavior of Large-Strain Hot Rolled Binary Mg-1Dy Alloy](#) [2014]
I. Basu, T. Al-Samman, **Magnesium Technology** 2014, Springer International Publishing, pp.133-38
24. [Shear band-related recrystallization and grain growth in two rolled magnesium-rare earth alloys](#) [2013]
I. Basu, T. Al-Samman, G. Gottstein, **Materials Science and Engineering: A** 579 (2013) 50-56

25. [Recrystallization and grain growth related texture and microstructure evolution in two rolled magnesium alloys](#) [2013]
I. Basu, T. Al Samman, G. Gottstein, **Materials Science Forum** 765 (2013) 527-531
26. [Effect of Process Variables on Microstructural Features during Solidification of AM60B Mg Alloy](#) [2012]
I. Basu, J.T. Wood, J.P. Weiler, **Materials Science Forum** 706-709 (2012) 1279-1284.
27. [Process-Structure-Property Relationships for Magnesium Alloys](#) [2012]
J.P. Weiler, J.T. Wood, I. Basu, **Materials Science Forum** 706-709 (2012) 1273-1278.

REFERENCES

Prof. Dr. J.F. Löffler, Laboratory of Metal Physics and Technology,
Department of Materials, ETH Zurich

Prof. Dr. J.T.M de Hosson, Dept. of Applied Physics,
The Zernike Institute for Advanced Materials, University of Groningen

Univ.- Prof. Dr. rer. nat. Dr. h.c. Günter Gottstein,
Institute of Physical Metallurgy and Metal physics, RWTH Aachen University