

DR. KAHRAMAN KESKINBORA

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RESEARCH INTERESTS

Nanofabrication of X-ray Optics, by means of focused **ion beam lithography**, **3D nano-printing** and **atomic layer deposition** for **diffractive optics**, **synchrotron radiation**, **X-ray spectro-microscopy**, **coherent imaging** and materials characterization using X-rays, processing of advanced materials.

SUMMARY OF RESEARCH OUTPUT

1 book, 16 journal papers, 11 proceedings, 5 grants, 1 US & 1 EU patent, 1 pending application, 1 best paper award, 3 poster awards, 2 grant reviews, referee work for 8 journals, 1 ongoing industry collaboration.

Scientific standing (according to Google Scholar, Sep. 2020) – Citations: 339 h-index: 11 i-10 index: 11

RESEARCH EXPERIENCE

- 11/2020 - Ongoing | **MIT, Department of Physics, USA**
DFG Research Fellow,
- 11/2018 – 10/2020 | **MIT, Department of Physics and Harvard University, SEAS, USA**
Visiting Scholar (50/50 Shared Position)
- 07/2015 – 10/2020 | **Max Planck Institute for Intelligent Systems, Germany,**
Research Group Leader Micro/Nano-Optics Group
- 11/2008 – 01/2009 | **NIMS, Fine Particle Processing Group, Japan,**
Visiting Researcher

EDUCATION

- 01/2011 – 07/2015 | **Ph.D. in Chemistry**, *summa cum laude*, Max-Planck-Institute for Intelligent Systems and University of Stuttgart, Germany
- 09/2007 – 12/2010 | **M.Sc. in Nanotechnology**, Honors, Anadolu University, Eskisehir, Turkey
- 09/2003 – 08/2007 | **B.Sc. in Materials Science & Engineering**, Highest GPA, Anadolu University

FUNDING

- August 2019 | DFG Research Fellowship to work at MIT for 18 months – *Granted*
- 1/2018 - Ongoing | Initiated industry-partnership Ph.D. project (Gül Dogan) with Robert Bosch GmbH.
- 04/2016 – 04/2017 | Grassroots Initiative of the MPI-IS (*2 projects, a total of 40k Euros*)
- 01/2010 – 12/2010 | TUBITAK 1002 Project under contract number 110M021

SCHOLARSHIPS, AWARDS, AND HONORS

- 01/2011 – 07/2015 | **Ph.D. Scholarship** International Max Planck Research School for Advanced Materials, Stuttgart, Germany
- 11/2008 – 01/2009 | **Internship Stipend** National Institute for Materials Science (NIMS), Tsukuba, Japan
- 04/2006 – 08/2006 | **Erasmus/Socrates Scholarship** Technische Universität Darmstadt, Germany

5/2015	Best Paper Award “Overview of the multilayer-Fresnel zone plate and the kinoform lens development at MPI for Intelligent Systems”, Proc. of SPIE, 95100U
08/2015	Two Poster Awards , Microscopy & Microanalysis Conference, Portland OR, US
07/2008	Best Poster Award 2 nd Anisotropic Science and Technology of Materials and Devices Workshop, Gebze, Turkey
2005, 2006, 2007	Honor Student , MATSE Dept., Anadolu University

TEACHING, MENTORING AND OUTREACH EXPERIENCE

Ph.D. Theses	Dr. Umut T. Sanli – Currently a Postdoctoral Research Fellow at MPI-IS. Ph.D. Candidate Margarita Baluksian – MPI-IS & Uni. Stuttgart, Physics Ph.D. Candidate Gul Dogan – Bosch, MPI-IS & Uni. Stuttgart, Chemistry
M.Sc. Theses	Gul Dogan – Atomic Layer Deposition of Titanium Nitride, University of Augsburg, (Currently a Ph.D. Student at Bosch GmbH, MPI-IS and Uni. Stuttgart) Faraz Junaid – Fabrication of Phase Gratings via Direct Laser Lithography for X-ray Phase Contrast Imaging Applications, Martin-Luther Universitat Halle-Wittenberg, (Currently in Accuray)
HiWi & Interns	Mert Bozkurt – Eskisehir Technical University, Department of Materials Sci.&Eng. Lea Griessbach – Uni. Stuttgart, Department of Chemistry Aydin Yagmur – (Currently at EOS) Burak Unutulmazsoy – (Currently at Dell EMC)
Online Lecture	Why is it so difficult to focus X-rays? Journey to Science (<i>Tur. Bilime Yolculuk</i>)
Course Instructor	Materials Characterization Laboratory, Anadolu University Dept. MATSE (3 years)
Public Outreach	I organized visits of high-school students to Materials Science Labs at AU (2007)
BOGY Instructor	At MPI-IS we host high-school students every year and I teach them about FIB/SEM

PROFESSIONAL SERVICE

Grant Referee	US Airforce Office of Scientific Research, Young Investigator Program Polish National Science Center, Proposal for Early Career Scientists
Journal Referee	ACS Applied Materials & Interfaces, Thin Solid Films, Microelectronic Engineering, Journal of Optics and Laser Technology, Journal of Modern Optics, Optical Engineering, Journal of Micro/Nano Lithography, MEMS, and MOEMS, 44 th International Conference on Metallurgical Coatings and Thin Films.
Guest Editor	Upcoming Special Issue on <i>Advanced Imaging Methods</i> for Crystals
SAB	24 th National Congress of Electron Microscopy, Turkey, 2019

COLLABORATIONS

Prof. Dr. Riccardo Comin (MIT, Cambridge, MA), **Prof. Dr. Metin Sitti**, Max Planck Institute for Intelligent systems, Stuttgart), **Prof. Dr. Anatoly Snigirev** (Immanuel Kant Baltic Federal University, Kaliningrad), **Prof. Dr. Mato Knez** (CIC Nanogune, San Sebastian), **Prof. Dr. Tim Salditt** (Uni. Gottingen), **Prof. Dr. Bob Westervelt** (Harvard University, Cambridge, MA), **Dr. Hakan Ceylan** (MPI-IS),

Dr. Joachim Graefe (MPI-IS), **Dr. Markus Weigand** (HZB, Berlin), **Dr. Lars Loetgering** (ARCNL, Amsterdam), **Dr. Pramitha Vayalamkuzhi** (IIT Madras).

INVITED TALKS AND SELECTED SEMINARS

6/2020 Invited	Focused Ion Beam Micro-machining for Binary and Quasi-3D X-ray Optics, Kolloquium der Mikrosystemtechnik, Uni Stuttgart, Germany
8/2019 Invited	Design, Fabrication, and Testing of Micro-Diffractive Optics for Coherent Control of X-rays, International Baltic School 2019, Kaliningrad, Russian Federation
5/2019 Invited	Nanofabrication of Diffractive Optics for Coherent Control of X-rays, Joint NSF & AFOSR Program Review 2019, Washington DC, and Kirtland Airforce Base, AFRL, Albuquerque, NM, USA
04/2018 Invited	Advanced Routes for Efficient Focusing of X-rays – Zone Plates, Kinoforms, and Computer-Generated Holograms, DPG Spring Meeting, Berlin, Germany
11/2017 Invited	Nanofabrication of High-Performance X-ray Optics, Harvard CNS Seminar, Cambridge MA, USA
08/2015	Fabrication and X-ray testing of true kinoform lenses with high efficiencies, SPIE Optics+Photonics, San Diego CA, USA
04/2014	High Throughput Fabrication of Fresnel Zone Plates via Ion Beam Lithography, DPG Spring Meeting, Dresden, Germany
03/2013	Fabrication of High-Resolution Micro Fresnel Zone Plates: The Ion Beam Lithographic Approach IMPRS/MIT Joint Forum for Materials for Sustainable Energy, Cambridge MA, USA

LANGUAGES

English Fluent – **German** Intermediate – **Turkish** Native

MEMBERSHIPS

01/2018 – Present	Materials Research Society
09/2019 – Present	American Chemical Society

REFERENCES

Prof. Dr. Gisela Schütz	Scientific Director at Max-Planck-Institute for Intelligent Systems, Germany e-mail: schuetz@is.mpg.de – Tel: +49 (711) 689 1950
Prof. Dr. Riccardo Comin	Professor of Physics at Massachusetts Institute of Technology, MA, USA e-mail: rcomin@mit.edu – Tel: +1 (617) 253-7834
Prof. Dr. Ender Suvaci	Professor of Materials Science at Eskisehir Technical University, Turkey e-mail: esuvaci@eskisehir.edu.tr – Tel: +90 (222) 321 35 50 / 6356
Dr. Corinne Grévent	Project Leader at Bosch GmbH, Germany e-mail: grevent@cgchem.de – Tel: +49 (712) 135 1472
Dr. Ali Sayir	Program Manager at AFOSR, Washington DC, USA e-mail: ali.sayir.2@us.af.mil – Tel: +1 703-696-7236