

Angika Bulbul



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Educational Qualifications

Ph.D.: Ben-Gurion University of the Negev, Beer Sheva, Israel, (2017-21).

Thesis title: Imaging Through Unusual Apertures by Advanced Digital Methods

Thesis advisor: Prof. Joseph Rosen.

M.Tech.: Applied Optics, Indian Institute of Technology, Delhi (2014-16).

Thesis advisor: Prof. G Vijaya Prakash on topic Laser and Chemical Hybrid Fabrication of Silicon Photonic Structure.

B.Tech.: Engineering Physics, National Institute of Technology, Calicut (2010-14).

Patent

US20210075947A1: - Partial Aperture Imaging System, (Rosen Joseph, Vijayakumar Anand, Bulbul Angika).

(<https://patents.google.com/patent/US20210075947A1/en>.)

Scholarships and Achievements:

- ✚ BGU Dean Awards 2020-2021 for the Faculty of Engineering Sciences
- ✚ Qualified prestigious Faran Mid way Negev scholarship in 2020.
- ✚ Best oral presentation award at IDL2019 conference.
- ✚ Registration Waiver for OSA's 2018 Imaging and Applied Optics Congress, grant funding from the Air Force Office of Scientific Research.
- ✚ Qualified prestigious Mid way Negev scholarship in 2018.
- ✚ Reviewer of Chinese Optics Letters Applied Optics and got review invitation from Biomedical Optics Express, Light Science and Application.
- ✚ IELTS 16th April, 2016 (International English Language Testing System), Overall -6.5
- ✚ Qualified prestigious examination in India "GATE" in 2014 by Government of India (Ministry of Human Resource Development), India.
- ✚ Qualified prestigious examination in India "UGC NET" in 2014 by Government of India (Ministry of Human Resource Development), India.
- ✚ AIEEE 2010 (All India Engineering Entrance Exam)
- ✚ Qualified Jawahar Navodaya Vidyalaya entrance 2006 by Government of India (Ministry of Human Resource Development), India.

Position held

OSA BGU student chapter President (2020-2021), **OSA BGU student chapter Vice President** (2020-2021),

Teaching Assistant (at IITD): PYL201: Classical Mechanics, PHP762: Optics Laboratory-II.

Press coverage

- ✚ <https://www.jpost.com/health-science/bgu-imaging-system-can-produce-images-at-higher-resolution-and-lower-cost-575988>
- ✚ <https://www.outlookindia.com/newscroll/indian-scientist-develops-lowcost-highres-satellite-imaging-system/1644980>
- ✚ <http://milaero.icconnect007.com/index.php/article/114676/new-bgu-system-produces-high-res-images-at-low-cost/114679/?skin=milaero>

✦ <https://www.hayadan.org.il/high-resolution-imaging-system-for-imaging-from-space2412186>

Awards and participation

- ✦ GYSS 2021 conference
- ✦ Participated in Lasers: Technology & Applications in Engineering and Medicine workshop 2015
- ✦ 3rd position in inter-NIT Chess championship 2013.
- ✦ Grabbed 1st rank in Science Quiz, Secured 2nd position in Social Science Quiz 2007.
- ✦ Won Gold medal for 7th Jharkhand State -Do-Championship 2007.
- ✦ Won Silver medal in National Karate Championship 2007.
- ✦ Secured 3rd position in Long Jump at cluster level Athletics meet 2006.

Few Publications

- ✦ **Angika Bulbul**, Nathaniel Hai and Joseph Rosen; Coded aperture correlation holography (COACH) with a superior lateral resolution of FINCH and axial resolution of conventional direct imaging systems; 2021; **Optic Express**; <https://www.osapublishing.org/oe/abstract.cfm?doi=10.1364/OE.446945>
- ✦ **Angika Bulbul** and Joseph Rosen; Super-resolution imaging by optical incoherent synthetic aperture with one channel at a time; 2021; **Photonics Research**, <https://www.osapublishing.org/prj/fulltext.cfm?uri=prj-9-7-1172&id=451694>
- ✦ **Angika Bulbul** and Joseph Rosen; Partial aperture imaging system based on sparse point spread holograms and nonlinear cross-correlations; 2020; Q1; **Scientific Reports**; <https://www.nature.com/articles/s41598-020-77912-3>.
- ✦ J. Rosen, A. Vijaykumar, M. Kumar, M. Ratnam Rai, R. Kelner, Y. Kashter, **A. Bulbul** and S. Mukherjee, "Recent advances in self-interference incoherent digital holography", 2019; Advances in Optics and Photonics <https://www.osapublishing.org/aop/abstract.cfm?uri=aop-11-1-1>
- ✦ J. Rosen, A. Vijaykumar, M. Ratnam Rai, S. Mukherjee and **A. Bulbul**, "Review of 3D Imaging by Coded Aperture Correlation Holography (COACH)", 2019; **Applied Sciences**, <https://www.mdpi.com/2076-3417/9/3/605>
- ✦ **Angika Bulbul**, A. Vijayakumar and Joseph Rosen; Superresolution far-field imaging by coded phase reflectors distributed only along the boundary of synthetic apertures; 2018; **Optica**; <https://www.osapublishing.org/optica/abstract.cfm?uri=optica-5-12-1607>
- ✦ **Angika Bulbul***, A. Vijayakumar* and Joseph Rosen; Partial Aperture Imaging by Systems with Annular Phase Coded Masks; 2017; **Optic Express**; <https://www.osapublishing.org/oe/abstract.cfm?uri=oe-25-26-33315>
- ✦ Pawan Kumar Kanaujia, **Angika Bulbul**, Vinod Parmar, G. Vijaya Prakash; Ultrafast laser based hybrid methodology of silicon microstructure fabrication for optoelectronic applications; 2017; **Applied Surface Science**; <https://doi.org/10.1016/j.apsusc.2017.05.107>

Conferences

- ✦ **Angika Bulbul** and Joseph Rosen "Synthetic Aperture Imaging with Sparse Point Response by Annular Array of Coded Phase Reflectors" OSA Imaging and Applied Optics, June. 2020. https://www.osa.org/zh-n/meetings/osa_meetings/osa_imaging_and_applied_optics_congress/schedule/
- ✦ **Angika Bulbul**, A. Vijayakumar and Joseph Rosen "Superresolution Far-Field Imaging by Coded Phase Reflectors" OSA Imaging and Applied Optics, June. 2019, Munich, Germany. <https://www.osapublishing.org/abstract.cfm?uri=ISA-2019-IM3B.5>
- ✦ **Angika Bulbul**, A. Vijayakumar and Joseph Rosen " Superresolution Far-Field Imaging by Annular Array of Coded Phase Apertures" at International Day of Light 2019 conference, BGU, May. 2019, Beer Sheva, Israel. **(Best Oral Presentation Award)**, https://in.bgu.ac.il/engn/electrop/Documents/Program_IDL_2019_BGU.pdf
- ✦ **Angika Bulbul**, A. Vijayakumar and Joseph Rosen "Partial Aperture Imaging with a Single Camera Shot" Poster presentation at OSA, Nov. 2018, Tel Aviv, Israel. <https://www.aeai.org.il/wp-content/uploads/sites/10/2018/10/LALS-program-pdf.pdf>

- ✦ **Angika Bulbul**, A. Vijayakumar and Joseph Rosen " Far-Field Imaging by Annular Phase Coded Apertures" OSA Imaging and Applied Optics, June. 2018, Orlando, United States. **(Received Presentation waiver)**
<https://www.osapublishing.org/abstract.cfm?uri=ISA-2019-IM3B.5>
- ✦ Pawan K. Kanaujia, **Angika Bulbul** and G. Vijaya Prakash; Modification of Silicon microstructures Using a Novel Hybrid Fabrication Method, International Conference on Technologically Advanced Materials and Asian Meeting on Ferroelectricity (ICTAM-AMF10).

Master's Thesis

Title – *Laser and Chemical Hybrid Fabrication of Silicon Photonic Structure*

Supervisor – Prof. G Vijaya Prakash, Indian Institute of Technology Delhi, India

Objective: To fabricate laser induced microstructures on silicon using femtosecond laser followed by Chemical processing (Isotropic, anisotropic and electrochemical etching) - Quantitative study of morphology and applications in optoelectronics such as nano/micro mirrors.

Obtained: Array of inverted pyramidal photonic structures, semispherical photonic structures with no surface damage.

Mini Projects Undertaken in the Past

(1) *Synthesis of Silver Nanoparticles and Nanowires (AgNP & AgNW)*

Supervisor – Dr. Aji A. Anappara, National Institute of Technology (NIT) Calicut, India

Objective: Synthesis of Silver nanoparticles and nanowires by self-seeding methodology. Characterization of fabricated samples by various techniques to study their advantages.

(2) *Study of Wave Packet Propagation and Transition Dipole Matrix Calculation.*

Supervisor - Prof S. Ramasesha, Indian Institute of Sciences (IISc) Bangalore, India.

Objective: To compute transition dipole of n-decapentane and perturbed wave packet propagation.

Work Hands-On Experience (Before Ph.D.)

Eye test using Laser speckle Optometer, Study of spatial filtering, Newton Interferometer, Twyman–Green Interferometer, Spatial light modulator (SLM), Study of various types of Hologram and Recording, and Reconstruction of Fresnel Hologram, Fabrication of Photonic Crystal using Femtosecond Laser system, Autolab for etching and thin film deposition, Chemical Processing, Fabrication of a convex lens in Optical Workshop, Polarizing microscope, SEM, XRD, Spin-coating, Ellipsometer, PL studies, UV Visible Photospectrometer and Thermal Evaporation system

Few Courses Work (Before Ph.D.)

Neutral Networks in Optics and their application for COSI, Advanced Topics in Optical Imaging, Statistical Optics, Fourier Optics, Laser Systems And Applications, Basic Optics, Condensed Matter Physics, Photonics, Semiconductor Optoelectronics, Nano Science And Technology, Photonics, Light Matter Interaction In Resonators, Fourier Optics And Optical Information Processing, Theory And Applications Of Holography, Optical Electronics, Optical System Design, Optical Instruments And Metrology, Optical Sources Detectors And Photometry, Optics Laboratory, Optical Workshop. Fiber Optics, Electromagnetics, Computational Physics, Applied Quantum Mechanics, Semiconductor Physics and Technology, Mathematics, and Physics of Nanostructures & Nanoscale Devices...

References

Prof. Joseph Rosen,

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