

Kiesar Sideeq Bhat (Dr.)

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Citations: 1424 | **h-index: 20** | **i10-index: 25** | ORCID: 0000-0003-2526-3328

Principal Investigator II (Ramanujan Fellow/Scientist D/Assistant Professor) II Department of Bioresources II
University of Kashmir, Srinagar-190006.

OBJECTIVE:

To work dedicatedly in a challenging and fast paced environment, leveraging my current knowledge and fostering creativity with many learning opportunities and to work in my areas of expertise to have valuable contribution in achieving organization's objectives and to excel professionally. I strongly believe that smart & hard work and teamwork is the key to success.

EDUCATION:

Degree	School/University	Country	Year	Grade/CGPA
PhD	School of semiconductor and Chemical Engineering, Chonbuk National University	S.Korea	2015-2019	3.92/4.00
Masters in Organic Chemistry	University of Pune.	Maharashtra, India	2010-2012	1 st Grade (63%)

TEACHING EXPERIENCE:

Teaching PG courses at the Department of Bioresources at University of Kashmir since 2021.

RESEARCH EXPERIENCE:

1. Principal Investigator/Scientist D/Assistant Professor (Ramanujan Faculty Fellow) at University of Kashmir. Project work: "Development of printable sensor system for multi bio-analyte detection".	02-09-2021 - present
2. Research Scientist at Singapore-MIT Alliance for Research and Technology (SMART). Project work: "Magnetic Resonance Relaxometry (MRR) Diagnostics based stem cell phenotyping and purification" Principal Investigator: Professor Joongyoon Han, Electrical Engineering and Computer Science and Professor of Biological Engineering, MIT, USA.	05-09-2022 – 31-12-2023
3. Postdoctoral Research Fellow, Project work 1: "Development of 3D printed and flexible electronic devices through material and structure design". Project work 2: "Development of 4D printed smart systems through material and structure design". Principal Investigator: Professor Juha Song, School of Chemical and Biomedical Engineering, Nanyang Technological University, Singapore. Nanyang Technological University, Singapore	02.01.2021-01-01-2022 02.01.2020-31-12-2020
<ul style="list-style-type: none">Developed synthesis methodology of composite materials.Designed and conducted experiments to optimize and prove 4D mechanism in hard plastic materials.Conducted extensive material characterization techniques such as FESEM/EDX, XRD, DSC, etc on synthesized materials.Coordinated with colleagues, lab manager, technicians, and international vendors to purchase chemicals, set up, operate, and maintain heavy equipment.Participated and presented in virtual conferences and workshops conducted by HP-NTU corporate laboratory.	
4. Postdoctoral Research Fellow,	Sept – Oct

<p>Project work: “Development of sensors for methylated DNA detection in real samples”. Principal Investigator: Professor Sooman Lim, School of Printable and Flexible Electronic Engineering, Jeonbuk National University, South Korea.</p> <ul style="list-style-type: none"> Developed ZnO NRs modified with Co and Au Nanostructures based sensor devices for electrochemical detection of DNA samples. Conducted extensive material characterization techniques such as FESEM/FIB/EDX, TGA, XRD, TEM, AFM, linear sweep voltammetry, cyclic voltammetry, amperometry, Impedance spectroscopy etc on synthesized materials. <p>5. Research Assistant, Project work: “Synthesis, Characterization and biological activity of Aminothiona-Phthoquinone derivatives”. Principal Investigator: Prof. Sunita A. Salunke, Dept. of Chemistry, University of Pune, Pune-411007, India.</p>	<p>2019</p> <p>2013 – 2014</p>
<p>6. M.Sc. level project work (6 months), Project work: “Synthesis, characterization and biological activity of Ferrocenylhelicin hybrid compounds”. Principal Investigator: Prof. Vidya Avasare, Dept. of Chemistry, S.P. College, Pune -411030, india.</p>	<p>2011 – 2012</p>

TECHNICAL SKILLS:

- Engineering of stem cells for cell therapy manufacturing, MRR diagnostics.
- 3D/4D printed flexible electronics.
- Organic & Inorganic Synthesis (Sol-gel method, synthesis of metal and metal oxide nanoparticles, vertical growth of ZnO NRs, Synthesis of silver inks, FET device fabrication).
- Characterization of Organic, Inorganic compounds through various Spectroscopic techniques (e.g. IR, UV, XRD, FESEM, TEM, AFM, 2D profile, FIB, EDS/EDX, XPS, TGA, Mass spectra, ¹HNMR, ¹³CNMR, HETCOR, COSY, LCMS etc.).
- Deposition techniques (Sputtering, physical vapor deposition, nozzle-jet/ink-jet printing, 3D printing, spin coating), electrochemical measurements etc
- Various chromatographic techniques (Thin layer, Column).
- Familiar with software's like CHEM Draw, CHEM Sketch, Solid works, Origin pro 8 etc.
- Computer Proficiency: MS OFFICE, Windows 2003, 2007, 2010.

CORE COMPETENCIES:

- Collaboration and Networking
- Teaching and Education
- Scientific communication
- Organizing conferences
- Project management
- Organizational leadership
- Research and Development
- Data analyzing
- Report writing

PROJECT PARTICIPATION:

- Development of materials and core technologies for hybrid green energy window (2015.03.01 - 2016.08.31).
- Development of high-performance flexible nano-chemical sensors for detecting multicomponent in solution (2017.08.14 - 30-06-2019).
- 4D printing of shape reconfigurable and recyclable materials (2020-2021).
- 3D printing of flexible electronic devices using multi-materials matching systems (2020-2021).
- Interfacial engineering of printable and flexible sensors for multi analyte detection (2021 - present)
- MRR as a critical quality analytics in cell manufacturing for cell therapy products (2022 – 2023)

STUDENTS SUPERVISED:

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- Team leader of sensor research group 2 masters and 2 Undergraduate students at Chonbuk National University, South Korea
 - Team leader of 2 postdocs, 2 Masters student, and 1 Undergraduate student at Nanyang Technological University

RESEARCH INTEREST:

- Magnetic Resonance Relaxometry in diagnostics and stem cell manufacturing.
- Sensors: Design, fabrication and characterization of wearable/biosensors, chemical and mineral sensors.
- 3D printing and 4D mechanism: Materials characterization, structural design and 4D mechanism demonstration based on stimuli to response reaction of various materials.
- Printable and flexible electronics: Synthesis, chemical design, and characterization of conductive/semiconductive inks for flexible electronics.
- Inorganic nanostructure synthesis: Metal and metal oxide nanomaterial and nanocomposites.
- Organic synthesis: Chemical design and characterization of Complex organic structures.

PATENTS:

- Silver ink composition and methods for preparing the same (은 잉크 조성물 및 이의 제조방법) Korea Patent number: 10-2077690. Registration date: 2020.2.10. Inventors: Yoon-Bong Hahn, **Kiesar Sideeq Bhat**, Jinyoung Yoo. Also handed over to a company for commercialization.
- Plastically Deformable 3D Objects with Heat Channels (PCT patent application number PCT/US2021/018783). Inventors: SONG Juha; **Kiesar Sideeq BHAT**; SHI Qian; Muhammad Aidil BIN JUHARI; Aravind Kumar JAYASANKAR; HAN Rui Yuan; Rafael BALLAGAS; Michael John REGAN.

FELLOWSHIPS AND AWARDS:

- BK21 full fellowship award for doctoral program (2015-2019), School of semiconductors and chemical engineering, Chonbuk National University, South Korea.
- Best poster presentation award, Kiesar Sideeq Bhat, MCARE, 19-23 August 2019, Jeju, S. Korea. Cost-effective silver ink for printable and flexible electronics with robust mechanical performance
- Prestigious Ramanujan Fellowship award, (5 years duration) Principal Investigator: Kiesar Sideeq Bhat (Dr), Department of Bioresources/Center for Interdisciplinary Research and Innovations (CIRI), University of Kashmir, Srinagar, India.

PUBLICATIONS:

1. **Kiesar Sideeq Bhat**, Hyejin Kim, Asrar alam, Myunggon Ko, Jungeun An, Sooman Lim. Rapid and label-free detection of 5-hydroxymethylcytosine in genomic DNA using an Au/ZnO nanorods hybrid nanostructure based electrochemical sensor. *Adv. Healthcare Mater.* 2021, 2101193. (**Impact factor 11.092**).
2. **Kiesar Sideeq Bhat**, Rafiq Ahmad, Tahmineh Mahmoudi, and Yoon-Bong Hahn. High performance chemical sensor with field-effect transistors array for selective detection of multiple ions. *Chemical Engineering Journal* 417 (2021) 128064. (**Impact factor 16.744**).
3. **Kiesar Sideeq Bhat**, Umesh T. Nakate, Jin-Young Yoo, Yousheng Wang, Tahmineh Mahmoudi, and Yoon-Bong Hahn* Cost-effective Silver Ink for Printable and Flexible Electronics with Robust Mechanical Performance. *Chemical Engineering Journal*, 373 (2019) 355-364, (**Impact factor 16.744**).
4. **Kiesar Sideeq Bhat**, Umesh Tukaram Nakate, Jin-Young Yoo, Yousheng Wang, Tahmineh Mahmoudi, and Yoon-Bong Hahn* Nozzle-jet printed Ag/rGO based flexible FET sensor for phosphate ion detection. *ACS Omega*, 2019, 4 (5), pp 8373-8380. (**Impact factor 4.132**).
5. **Kiesar Sideeq Bhat**, Rafiq Ahmad,* Jin-Young Yoo, Yoon-Bong Hahn* Fully nozzle-jet printed non-enzymatic electrode for biosensing application. *Journal of Colloid and Interface Science* 512 (2018) 480-488. (**Impact factor 9.965**)

6. **Kiesar Sideeq Bhat**, Rafiq Ahmad, Jin-Young Yoo and Yoon-Bong Hahn* Nozzle-jet printed flexible field-effect transistor biosensor for high performance glucose detection. *Journal of Colloid and Interface Science* 506 (2017) 188-196. **(Impact factor 9.965)**
7. **Kiesar Sideeq Bhat**, Rafiq Ahmad, Yousheng Wang and Yoon-Bong Hahn* Low-temperature sintering of highly conductive silver ink for flexible electronics. *J. Mater. Chem. C*, 2016,4, 8522-8527. **(Impact factor 8.067)**
8. **Kiesar Sideeq Bhat**, Shi Qian, Aidil Mohammad Johari, Song Juha. 4D mechanism of shape reconfigurable and recyclable smart plastics. (manuscript In progress, Target journal_ *Advanced Materials*, **Impact factor 32.086**).
9. **Kiesar Sideeq Bhat**, Hyejin Kim, Asrar alam, Myunggon Ko, Jungeun An, Sooman Lim. A fast and label-free detection of hydroxymethylated DNA using a nozzle-jet printed AuNPs@Ti3C2 MXene-based electrochemical sensor. *Talanta*, 244, 123421, **(Impact factor 6.556)**.
10. Dattatray Chadar, Soniya S. Rao, Ayesha Khan, Shridhar P. Gejji, **Kiesar Sideeq Bhat**, Thomas Weyhermuller and Sunita Salunke-Gawali*. Benzo[α]phenoxazines and Benzo[α]phenothiazine from Vitamin K3: Synthesis, Molecular structures, DFT studies and Cytotoxic activity. *RSC Adv.*, 2015, 5, 57917-57929. **(Impact factor 4.036)**
11. Rafiq Ahmad,* Nirmalya Tripathy, Muhammad Yasir Khan, **Kiesar Sideeq Bhat**, Min-sang Ahn, Gilson Khang, Yoon-Bong Hahn* Hierarchically assembled ZnO nanosheets microspheres for enhanced glucose sensing performances. *Ceramics International* 42 (2016) 13464-13469. **(Impact factor 5.532)**
12. Rafiq Ahmad,* Nirmalya Tripathy, Muhammad Yasir Khan, **Kiesar Sideeq Bhat**, Min-sang Ahn and Yoon-Bong Hahn* Ammonium ion detection in solution using vertically grown ZnO nanorod based field-effect transistor. *RSC Adv.*, 2016, 6, 54836-54840. **(Impact factor 4.036)**
13. Rafiq Ahmad, **Kiesar Sideeq Bhat**, Min-Sang Ahn and Yoon-Bong Hahn* Fabrication of a robust and highly sensitive nitrate biosensor based on directly grown zinc oxide nanorods on a silver electrode. *New J. Chem.*, 2017, 41, 10992-10997. **(Impact factor 3.925)**
14. Yousheng Wang, Tahmineh Mahmoudi, Won- Yeop Rho, Hwa-Young Yang, Seunghui Seo, **Kiesar Sideeq Bhat**, Rafiq Ahmad, Yoon-Bong Hahn* Ambient-air-solution-processed efficient and highly stable perovskite solar cells based on CH₃ NH₃PbI₃-xCl_x-NiO composite with Al₂O₃/NiO interfacial engineering. *Nano Energy* 40 (2017) 408-417. **(Impact factor 19.069)**
15. Rafiq Ahmad, Nirmalya Tripathy, Min-Sang Ahn, **Kiesar Sideeq Bhat**, Tahmineh Mahmoudi, Yousheng Wang, Jin-Young Yoo, Dae-Wook Kwon, Hwa-Young Yang & Yoon-Bong Hahn* Highly efficient non-enzymatic glucose sensor based on cuo modified vertically-grown ZnO nanorods on electrode. *Sci Rep* 7, 5715 (2017). **(Impact factor 4.996)**
16. Min-Sang Ahn, Rafiq Ahmad,* **Kiesar Sideeq Bhat**, Jin-Young Yoo, Tahmineh Mahmoudi, Yoon-Bong Hahn* Fabrication of a solution-gated transistor based on valinomycin modified iron oxide nanoparticles decorated zinc oxide nanorods for potassium detection. *Journal of Colloid and Interface Science* 518 (2018) 277-283. **(Impact factor 9.965)**
17. Yousheng Wang, Tahmineh Mahmoudi, Hwa-Young Yang, **Kiesar Sideeq Bhat**, Jin-Young Yoo and Yoon-Bong Hahn* Fully-ambient-processed Mesoscopic Semitransparent Perovskite Solar Cells by Islands-structure-MAPbI₃-xCl_x-NiO Composite and Al₂O₃/NiO Interface Engineering. *Nano Energy* 49 (2018) 59-66. **(Impact factor 19.069)**
18. Umesh Nakate, Rafiq Ahmad, Pramila Patil, **Kiesar Sideeq Bhat**, Yousheng Wang, Tahmineh Mahmoudi, Y. T Yu, Eun-kyung Suh, Yoon-Bong Hahn. High response and low concentration hydrogen gas sensing properties using hollow ZnO particles transformed from polystyrene@ZnO core-shell structures. *Int. J. Hydrogen Energy* 44 (2019) 15677-15688. **(Impact factor 7.139)**
19. Umesh Nakate, Rafiq Ahmad, Pramila Patil, Yousheng Wang, **Kiesar Sideeq Bhat**, Tahmineh Mahmoudi, Y. T Yu, Eun-kyung Suh, Yoon-Bong Hahn. Improved selectivity and low concentration hydrogen gas sensor application of Pd sensitized heterojunction n-ZnO/p-NiO nanostructures. *Journal of Alloys and Compounds* 797 (2019) 456-464. **(Impact factor 6.371)**

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20. Xue Qi, Xinlin Li, Hyunjin Jo, **Kiesar Sideeq Bhat**, Sehyun Kim, Jungeun An, Jae-Wook Kang, Sooman Lim. Mulberry paper-based graphene strain sensor for wearable electronics with high mechanical strength. *Sensors and Actuators A-Physical*, 301(2020), 111697. **(Impact factor 4.291)**
 21. Jingyi Zhang, Lydia Chong, **Kiesar Sideeq Bhat**, Derrick Yong, Juha Song* Supramolecular and Additive Coatings for Designing Artificial Spores in Biomedical Engineering and Beyond: Overview and Prospects. *Biomaterials*, 266, 120473, 2021. **(Impact factor 15.304)**
 22. Anha Bhat, Shoaib Anwer, **Kiesar Sideeq Bhat**, M. Infas H. Mohideen, Kin Liao, and Ahsanulhaq Qurashi. Prospects challenges and stability of 2D MXenes for clean energy conversion and storage applications, *Nature npj journal of 2D materials* 5(1), 61, 2021. **(Impact factor 11.541)**
 23. Saqib Qazi Muhammad, Chougale Mahesh, Khan Muhammad Umair, Shaukat Rayyan Ali, Kim Jungmin, **Kiesar Sideeq Bhat**, Bae Jinho. Lignocellulosic Waste Fruit Shell Based Tribopositive Materials for Harnessing Green Energy: A Comparative Analysis. *Materials Today Sustainability* 18, 100146, **(Impact factor 7.244)**.
 24. Marya Khan, Vandana Nagal, Sakeena Masrat, Talia Tuba, Nirmalya Tripathy, Shamshad Alam, Ajit Khosla, Mansoor Ali Syed, **Kiesar Sideeq Bhat** and Rafiq Ahmad. Vertically-Oriented Zinc Oxide Nanorods Based Electrolyte-Gated Field-Effect-Transistor for High-Performance Glucose Sensing. *ACS Anal. Chem.* 2022, 94, 25, 8867–8873. **(impact factor 8.008)**.
 25. Sakeena Masrat, Vandana Nagal, Marya Khan, Iqra Moid, Shamshad Alam, **Kiesar Sideeq Bhat**, Ajit Khosla, Rafiq Ahmad. Electrochemical Ultrasensitive Sensing of Uric Acid on Non-enzymatic Porous Cobalt Oxide Nanosheets-Based Sensor. *Biosensors* **2022**, 12(12), 1140. **(impact factor 5.4)**.
 26. Sakeena Masrat, Vandana Nagal, Marya Khan, Akil Ahmad, Mohammed B. Alshammari, Shamshad Alam, Ajit Khosla, **Kiesar Sideeq Bhat***, Rafiq Ahmad*. Boosted electrochemical sensing of uric acid with zinc oxide nanorods and copper oxide nanoseeds based hybrid nanostructures. *ACS Appl. Nano Mater.* 6, 18, **2023**. **(impact factor 5.9)**.
 27. Vandana Nagal, Sakeena Masrat, Marya Khan, Shamshad Alam, Akil Ahmad, Mohammed B Alshammari, **Kiesar Sideeq Bhat**, Sergey M Novikov, Prabhash Mishra, Ajit Khosla, Rafiq Ahmad. Highly Sensitive Electrochemical Non-Enzymatic Uric Acid Sensor Based on Cobalt Oxide Puffy Balls-like Nanostructure. *Biosensors* **2023**, 13(3), 375. **(impact factor 5.4)**.
 28. Nagal, Vandana; Khan, Marya; Masrat, Sakeena; Alam, Shamshad; Ahmad, Akil; Alshammari, Mohammed; **Bhat, Kiesar Sideeq** ; Ahmad, Rafiq. Hexagonal Cobalt Oxide Nanosheets Based Enzymeless Electrochemical Uric Acid Sensor with Improved Sensitivity. *New J. Chem.*, 2023,**47**, 4206-4212. **(impact factor 3.3)**.
 29. Rafiq Ahmad, Abdullah, Md Tabish Rehman, Mohamed F AlAjmi, Shamshad Alam, Kiesar Sideeq Bhat, Prabhash Mishra, Byeong-Il Lee. An Electroanalytical Enzymeless α -Fe₂O₃-ZnO Hybrid Nanostructure-Based Sensor for Sensitive Quantification of Nitrite Ions. *Nanomaterials* 14 (8), 706. **(impact factor 5.4)**.
 30. Metabolic modulation to improve MSC therapeutic potential for articular cartilage repair Ching Ann Tee; Daniel Ninio Roxby; Rashidah Othman; Vinitha Denslin; Kiseer Sideeq Bhat; Zheng Yang; Jongyoon Han; Lisa Tucker-Kellogg; Laurie A. Boyer. **Stem Cell Research & Therapy (Submitted) (impact factor 6.94)**.
 31. Muthu, Yie-Hou Lee, Rhodolfo, Andrea, Kiesar Sideeq Bhat, Chester Lee-Drum. Magnetic resonance relaxometric study of cardiomyocytes. (Manuscript in progress for **Science translational medicine journal**) **(impact factor 19.319)**.
 32. Rafiq Ahmad, MA Yewale, Marya Khan, Umesh T Nakate, Akil Ahmad, Mohammed B Alshammari, Krishna D Bhalerao, Kiesar Sideeq Bhat, Byeong-il Lee. Bifunctional CuO nanostructured materials preparation for ethanol gas and riboflavin sensing applications. *Sensors and Actuators B: Chemical*, 135979, 415, 2024. **(Impact factor 8.4)**.
 33. Rafiq Ahmad, Kiesar Sideeq Bhat*, Vandana Nagal, Umesh T. Nakate, Akil Ahmad, Mohammed B. Alshammari,

Shamshad Alam, Byeong-il Lee,* Surface-engineered vertically-aligned ZnO nanorod for sensitive non-enzymatic electrochemical monitoring of cholesterol. Helion cell press, in communication. **(Impact factor 4.0)**.

PERSONAL INFORMATION:

- Date of Birth: 2nd November 1989
- Gender: Male
- Languages Known: Arabic, English, Urdu, Kashmiri, Marathi and Korean.
- R/O: Lankration, Villgam; Hundwara; Jammu & Kashmir; India; Pin Code: 193224.
- Hobbies: Playing cricket, football, volleyball, and table tennis, Horse riding, Gym, Swimming, cooking etc.

REFEREES:

- Yoon-Bong Hahn, (Ph.D University of Utah, USA). Professor, Korea Academy of Science and Technology, Director, Head, School of Semiconductor and Chemical Engineering, Chonbuk National University South Korea.

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- Ahsanulhaq Qurashi (PhD CBNU, South Korea). Associate Professor, Khalifa University, Abu Dhabi, UAE.

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- Jongyoon Han (PhD), Professor MIT EECS and Biological Engineering; Research Laborator of Electronics, MIT Lead PI of NIIMBL engagement, MIT, USA.

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I hereby declare that as per as my knowledge the information provided above is true.



Kiesar Sideeq Bhat (Dr.)