Hafiz Kabeer Raza Chishti

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HIGHLIGHTS OF QUALIFICATIONS

- 14 publications in high-quality academic journals and conference proceedings
- 150+ citations
- 9+ years of teaching and research experience
- Developed Curriculum for BS-Materials Science & Engineering at KFUEIT
- Contributed to three funded research projects at KFUPM
- Conducted a two-day workshop on Dynamic Mechanical Analysis of Polymers and Polymer Composites at Center of Excellence in Nanotechnology, KFUPM
- Part of the teams for self-assessment reports (SAR) and file work leading to Accreditation at GIK Institute (for PEC) and KFUPM (for ABET)
- Involved in the revision of curriculum at GIKIEST, KFUEIT and PU
- Worked for implementation of outcome-based-education (OBE) system at GIK Institute

RESEARCH KEYWORDS

- Finite Element Modeling
- Polymer Matrix Composites
- Effective Medium Theory
- Micromechanics
- Encapsulation of CPV Modules
- Thermal Management
- Material Properties Estimation Models
- Metal Matrix Composites
- Mean Field Homogenization
- Application-focused Design
- Tubes for Polymeric Heat Exchangers
- Parameters Optimization in Composites

WORK HISTORY

► **Assistant Professor, IMME, PU Lahore.** **April 2022-Date**

- Teaching undergraduate and post graduate courses
- Developing Curriculum for MS in Corrosion Engineering
- Courses: Thermodynamics & Kinetics, Matlab & Simulink

► **Assistant Professor, ME Dept., KFUEIT, Rahim Yar Khan** **Jan 2021 - March 2022**

- Teaching undergraduate and graduate courses
- Writing SAR for PEC and HEC
- Developing / revising Curricula of BS programs in Materials Science and Engineering and Mechanical Engineering
- Courses Taught: Probability & Statistics, Engineering Statics, Finite Element Methods, Manufacturing Processes, Engineering Physics

► **Lecturer-B, ME Dept., KFUPM, Saudi Arabia** **2015-2020**

- Taught lab courses related to Materials Science
- Developed computational tools for material design and modeling for polymer matrix composites
- Served the ABET accreditation committee

► **Research Associate, FMSE, GIKIEST, Topi, Pakistan** **2014-2015**

- Taught courses related to
    - Strength of Materials
    - Mechanical Behavior of Materials
    - Deformation and Fracture of Engineering Materials
    - Crystallography
- Revising curriculum for Materials Engineering Programs with specialization of Manufacturing and Nanotechnology
- Part of the team for writing Self-Assessment-Reports for Accreditation by HEC and PEC

► **Graduate Assistant, FMSE, GIKIEST, Topi, Pakistan** **2011-2013**

- Taught lab courses related to
    - Composite Materials
    - Mechanical Testing
    - Heat Treatment
    - Nanotechnology

► **Business Development Engineer, Superior Technology, Lahore, Pakistan** **2010-2011**

- Tasks
    - Vendor Registration with Defense Sector
    - Manager Technical Support
    - Boosting the marketing activities

EDUCATION

► **Doctor of Philosophy, Mechanical Engineering, (CGPA 3.81/4.0)** **2015-2020**
King Fahd University of Petroleum & Minerals, Saudi Arabia
Specialization in Materials and Manufacturing

► **Master of Science, Materials Engineering, (CGPA 3.48/4.0)** **2010-2012**
Ghulam Ishaq Khan Institute of Engineering Sciences and Technology, Topi, Pakistan
Specialization in Composite Materials

► **Bachelor of Engineering, Metallurgical and Materials Engineering, (84%)** **2005-2009**
University of Engineering and Technology, Lahore, Pakistan

RESEARCH INTERESTS

► **Application-focused development of composite materials**

- Worked on development of Encapsulant of Concentrated photovoltaic systems
- 2 articles published, and several under review
- Currently working on development of Tubes of polymeric heat exchangers

► **Polymer Matrix Composites with Ultrahigh Thermal Conductivity**

- Developed new mathematical models for the estimation of thermal conductivity with non-dilute filler concentrations with variable particle size, geometry and preferred orientation
- 2 articles published, and 2 in pipeline
- Currently working on the composites with structured filler network
- Expected 2 patents from this work

► **Design, Processing and Development of Composite Materials**

- Developed mathematical models for the estimation of effective properties of composite materials (thermal and mechanical)
- 6 journal articles published, and several in pipeline
- Experienced in metal, polymer and ceramic -based composites
- Current focus on polymer matrix composites for thermal management applications

PROFESSIONAL DEVELOPMENT COURSES

- Outcome based Education (OBE) Workshops – GIKIEST **2015**
- Active learning strategies – KFUPM **2016**
- Lab safety procedures – KFUPM **2017**

MEMBERSHIPS WITH PROFESSIONAL BODIES

- Registered Engineer, Pakistan Engineering Council

SKILLS

► **Engineering Software and Programming Languages**

ANSYS, COMSOL Multiphysics, Mathematica, MATLAB

► **Materials Processing and Characterization**

Conventional and spark plasma sintering, Field Emission Gun Scanning Electron Microscopy, X-Ray Diffraction, Differential Scanning Calorimeter, Thermomechanical Analyzer, Dynamic Mechanical Analyzer, Universal Testing Machines, Hardness Testing, Hot Disc Equipment, Brabender Melt-Mixer

PUBLICATIONS

► **PhD Dissertation**

Application-Focused Design and Development of Polymer Matrix Composites for Thermal Applications, King Fahd University of Petroleum and Minerals, **2020**

► **MS Thesis**

Optimization of sintering parameters and thermal conductivity of diamond particles reinforced copper matrix composites, GIK Institute of Engineering Sciences and Technology, **2013**

► **Journal Papers**

1. Hafiz Muzammil Irshad, Abbas Saeed Hakeem, Kabeer Raza, Turki Nabieh Baroud, Muhammad Ali Ehsan, Sameer Ali, Muhammad Suleman Tahir. Design, Development and Evaluation of Thermal Properties of Polysulphone-CNT/GNP Nanocomposites, Nanomaterials. 10 (8) 2021 1-13 https://doi.org/10.3390/nano11082080 **(Impact Factor: 5.719)**
2. S.S. Akhtar, **K. Raza,** A.F.M. Arif, Khaled S. Al-Athel, Simulation led performance evaluation and design of polymer composite for encapsulation of low-concentration photovoltaic modules, Journal of Materials Engineering and Performance. July 2021 https://doi.org/10.1007/s11665-021-05999-4 **(Impact Factor: 2.036)**
3. **K. Raza**, S.S. Akhtar, A.F.M. Arif, A new differential scheme for the development of thermally conductive polymer-composites with non-dilute filler concentrations, International Journal of Thermal Sciences. 163 (2021) 1-11 https://doi.org/10.1016/j.ijthermalsci.2020.106809 **(Impact Factor: 4.779)**
4. **K. Raza**, S.S. Akhtar, A.F.M. Arif, A.S. Hakeem, Computational design and development of high-performance polymer-composites as new encapsulant material for concentrated PV modules, Scientific Reports (2020). 10, 1-14. https://doi.org/10.1038/s41598-020-62191-9 **(Impact Factor: 4.996)**
5. **K. Raza**, M.U. Siddiqui, A.F.M. Arif, S.S. Akhtar, A.S. Hakeem, Design and development of thermally conductive hybrid nanocomposites in polysulfone matrix, Polymer Composites. 40 (2019) 1419–1432. https://doi.org/10.1002/pc.24879, **(Impact Factor: 3.531)**
6. **K. Raza**, M. Shamir, M.K.A. Qureshi, A.S. Shaikh, M. Zain-ul-abdein, On the friction stir welding, tool design optimization, and strain rate-dependent mechanical properties of HDPE–ceramic composite joints, Journal of Thermoplastic Composite Materials. 31 (2018) 291–310. https://doi.org/10.1177/0892705717697779, **(Impact Factor: 3.027)**
7. S.S. Akhtar, M.U. Siddiqui, **K. Raza**, A. Hakeem, L. Kareem, A.F. Arif, A computational and experimental study on the effective properties of Al2O3 -Ni composites, International Journal of Applied Ceramic Technology 14 (2017) 766–778. https://doi.org/10.1111/ijac.12674, **(Impact Factor: 2.328)**
8. M. Zain-ul-Abdein, H. Ijaz, W. Saleem, **K. Raza**, A.S. Bin Mahfouz, T. Mabrouki, Finite element analysis of interfacial debonding in copper/diamond composites for thermal management applications, Materials (Basel). 10 (2017) 1–18. https://doi.org/10.3390/ma10070739, **(Impact Factor: 3.748)**
9. M. Zain-ul-abdein, **K. Raza**, F.A. Khalid, T. Mabrouki, Numerical investigation of the effect of interfacial thermal resistance upon the thermal conductivity of copper/diamond composites, Materials & Design. 86 (2015) 248–258. https://doi.org/10.1016/j.matdes.2015.07.059, **(Impact Factor: 9.417)**

10. **K. Raza**, F.A. Khalid, Optimization of sintering parameters for diamond–copper composites in conventional sintering and their thermal conductivity, Journal of Alloys and Compounds. 615 (2014) 111–118. https://doi.org/10.1016/j.jallcom.2014.06.139, **(Impact Factor: 6.371)**
11. M.T.S. Chani, K.S. Karimov, F. Ahmad Khalid, **K. Raza**, M. Umer Farooq, Q. Zafar, Humidity sensors based on aluminum phthalocyanine chloride thin films, Physica E: Low-Dimensional Systems and Nanostructures. 45 (2012) 77–81. https://doi.org/10.1016/j.physe.2012.07.012, **(Impact Factor: 3.369)**

► **Conference Proceedings**

1. **K. Raza**, S.S. Akhtar, A.F.M. Arif, A.S. Hakeem, Design of Composite Encapsulation for Concentrated Photovoltaic Systems with Improved Performance, in the proceedings of ASME International Mechanical Engineering Congress and Exposition, **2019**. https://doi.org/10.1115/IMECE2019-11720
2. **K. Raza**, S.S. Akhtar, A.F.M. Arif, A.S. Hakeem, An Improved Predictive Model for Effective Thermal Conductivity of Polymer Composites with Non-Dilute Filler Concentrations, in the proceedings of ASME International Mechanical Engineering Congress and Exposition, **2019**. https://doi.org/10.1115/IMECE2019-10960
3. S.S. Akhtar, A.F.M. Arif, M.U. Siddiqui, **K. Raza**, L.T. Kareem, A.S. Hakeem, Computational design and development of alumina-nickel droplet composites, in the proceedings of ASME International Mechanical Engineering Congress and Exposition, **2016**. https://doi.org/10.1115/IMECE2016-67071
4. **K. Raza**, F.A. Khalid, Fabrication and Characterization of coated and un-coated SiC reinforced copper matrix composites, in: National Symposium on Materials Technologies, **2013.** GIK Institute, Topi, Pakistan.

References

► Dr. Syed Sohail Akhtar (Advisor), KFUPM, KSA (ssakhtar@kfupm.edu.sa)

► Dr. Abul Fazal M. Arif (Co-Advisor), McMaster University, Canada (arifa10@mcmaster.ca)

► Dr. Syed Muhammad Zubair, KFUPM, KSA (smzubair@kfupm.edu.sa)

► Prof. Dr. Fazal Ahmad Khalid, Chairman, Rector, GIKIEST, Topi, Pakistan (rector@giki.edu.pk)

► Dr. Furqan Ahmad, Professor and Chairman, Department of Metallurgical and Materials Engineering, UET Lahore, Pakistan (furqan.ahmed@uet.edu.pk)

► Dr. Muhammad Zain-ul-Abdein, Associate Professor, Department of Metallurgical and Materials Engineering, UET Lahore, Pakistan (zain@uet.edu.pk)