

# DR. NAZRUL ISLAM KHAN

Assistant Professor  
Department of Mechanical Engineering  
Netaji Subhas University of Technology (NSUT), Govt. of NCT of Delhi  
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## OBJECTIVE

To take up prospective challenges as career opportunities and growth with honesty, good relationship and best performance, and translate my experience, knowledge, skills and abilities into value for an organization.

## ACADEMIC BACKGROUND

DEGREE/ DIPLOMA	INSTITUTION	BOARD/ UNIVERSITY	YEAR OF PASSING	PERCENTA GE/CPI
<b>Ph.D.</b>	National Institute of Technology, Silchar. Assam-788010	NIT Silchar	2019	9.33
<b>M. Tech in Mechanical Engineering (Materials &amp; Manufacturing Technology)</b>	National Institute of Technology, Silchar.	NIT Silchar	2015	9.70 (Topper)
<b>B.E. in Mechanical Engineering.</b>	Girijananda Choudhury Institute of Management and Technology, Azara, Ghy-17	Gauhati University	2013	78.83% (Honours)
<b>H.S.</b>	B.H College, Howly	Assam Higher Secondary Education Council	2008	69.20%
<b>H.S.L.C</b>	Adarsha Vidyapith High School, Howly	Secondary Education Board of Assam	2006	76.17% (Star)

## EXPERIENCES

1. Working as Assistant Professor, Department of Mechanical Engineering, Netaji Subhas University of Technology, New Delhi. (From 23/06/2021 to Till Date)
2. Sr. Assistant Professor, Department of Mechanical Engineering, GMR Institute of Technology Rajam, Andhra Pradesh, India-532127 (From July-2019 to 15/04/2021).
3. JRF and SRF, Department of Mechanical Engineering, National Institute of Technology Silchar, Assam, India-788010. (From July 2015 to July 2019)-Research Experience.

### Research Area:

- Self-Healing Materials.
- Nanotechnology and nano-materials.
- Carbon Fiber Reinforced Polymer (CFRP) composites.

- Carbon nano-filler reinforced nanocomposites.
- Adhesive joining of similar and dissimilar materials.
- Self-healing adhesive joints.
- Phase Change Materials

### SUBJECTS TOUGHT/INTERESTED

- Elements of Machine Design.
- Design of Machine Members.
- Additive and Digital Manufacturing.
- Composite Materials.
- Modern Manufacturing Methods.
- Strength of Materials.
- Engineering Materials
- Theory of Machines.
- Finite Element Methods.
- Engineering Drawing.
- Engineering Mechanics.
- Workshop Practice.
- CAD/CAM Lab.

### PROJECTS UNDERTAKEN

- **B.Tech:** Design and Fabrication Of Pedal Powered Saw.
- **M.Tech:** Influence of Self-Healing Microcapsules on Healing Performance of Metal-Epoxy Composite Adhesive.
- **Ph.D.:** Thermo-reversible Healing of Graphitic Nano-filler Hybridized CFRP Laminated Composites.

### TECHNICAL SKILLS

- ❑ AUTOCAD, PRO-E, UNIGRAPHICS, (CIPET, GUWAHATY).
- ❑ Known MATLAB and ANSYS.
- ❑ CNC Wire cut (MSME-Govt. of India).
- ❑ Blender Creator for Animated 3D Video
- ❑ COLLAB CAD (ABSOLVO).
- ❑ Automobile Workshop (Go 4 Tech.).
- ❑ Robotics Workshop (ROBOSAPIENCE).
- ❑ Industry Ready Program by TATA TECHNOLOGIES.

### FACULTY DEVELOPMENT PROGRAMME (FDP) ORGANIZED

1. Organized one week online FDP as convener on “**Advanced Nanomaterials and Their Engineering Applications, AdvNano-2020**” organised by Department of Mechanical Engineering, GMR Institute of Technology Rajam from 03/08/2020 to 08/08/2020.
2. Organized one week online FDP as convener on “**Recent Development and Research Scopes in Thermal Engineering (RDRSTE-2020)**” organised by Department of Mechanical Engineering, GMR Institute of Technology Rajam from 26/10/2020 to 31/10/2020.

3. Organized one week online FDP as coordinator on “3D Printing and Design” organised by Department of Mechanical Engineering, GMR Institute of Technology Rajam sponsored by AICTE Training And Learning (ATAL) Academy from 14/12/2020 to 18/12/2020.

#### **FACULTY DEVELOPMENT PROGRAMME (FDP) ATTENDED**

1. One week online FDP on “Programming in Finite Element method and its Applications to Practical problems using ABAQUS” organized by Civil Engineering Department, NITTTR, Chandigarh, from 04/10/2021 to 08/10/2021.
2. Two weeks Faculty Induction Program held at Netaji Subhas University of Technology, Delhi, Main Campus, from 5/07/2021 to 16/07/2021
3. Online FDP on “3D Printing & Design” organized by AICTE training and learning (ATAL) academy at GMR Institute of Technology, Rajam, AP from 14/12/2020 to 18/12/2020.
4. One week online Short Term Training Program (STTP) on “Renewable Energy Technology and Applications” organised by Mechanical Engineering, KMBB College of Engineering and Technology, Bhubaneswar, Odisha from 08/01/2021 to 13/01/2021.
5. One week online FDP on “Industrial Robotics and It’s Applications” organized by GMR Institute of Technology Rajam, AP from 06/07/2020 to 11/07/2020.
6. One week online FDP on “Energy and Environment : Conversion, generation, storage and efficient utilization” Department of Electrical Engineering and Civil Engineering, North Eastern Regional Institute of Science & Technology, Nirjuli, Arunachal Pradesh from 24/08/2020 to 28/08/2020.
7. One week online workshop on “NEMS Technology: Modern Interdisciplinary Approach in Engineering (NEMS Tech 2020)” organized by Department of Electronics & Instrumentation Engineering, National Institute of Technology, Silchar from 17/08/2020 to 21/08/2020.
8. 3-Days online FDP on “Waste Management under Covid-19 Pandemic Scenario: Challenges and Resolutions” organized by Mechanical Engineering, KMBB College of Engineering and Technology, Bhubaneswar, Odisha from 17/08/2020 to 19/08/2020.
9. 3-Days online FDP on “Modeling and Optimization of Engineering Systems” organized by Department of Mechanical Engineering, GMR Institute of Technology Rajam, AP from 23/06/2020 to 25/06/2020.
10. One week FDP on “Recent Advances in Mechanical Science and Engineering” organised by Mechanical Engineering, Siddartha Institute of Science and Technology, Puttur, Andhra Pradesh from 18/11/2020 to 22/11/2020.
11. One Week Faculty Development Programme on “Recent Development & Research Scopes in Thermal Engineering (RDRST-2020)” organized by Department of Mechanical Engineering, GMR Institute of Technology, Rajam, A.P, from 26/10/2020 to 31/10/2020.
12. One week online FDP on “Practical Aspects of Finite Element Analysis Using ABAQUS” organised by Andhra Pradesh State Skill Development Corporation
13. (APSSDC) from 18/04/2020 to 24/04/2020.
14. 3-Days FDP on “Advanced Materials Characterization Techniques”-A Research Perspective organised by Lendi Institute of Engineering and Technology from 28/05/2020 to 30/05/2020.

15. 3-Days FDP on “Automotive Structure Design Using CATIA” organised by Andhra Pradesh State Skill Development Corporation (APSSDC) from 30/04/2020 to 02/05/2020.
16. 4-Days FDP on “Environmental Engineering” organized by the GMR Institute of Technology Rajam, AP from 20/05/2020 to 23/05/2020.
17. 3-Days FDP on “Modeling and Optimization of Engineering Systems” organized by the GMR Institute of Technology Rajam, AP from 23/06/2020 to 25/06/2020.
18. 3-Days FDP on “Mechanical Behavior of Bio & Composite Materials” organized by the Andhra Loyola Institute of Engineering And Technology from 23/06/2020 to 25/06/2020.

#### INVITED TALK ON FDP/WEBINAR

- ❖ Invited speaker for the session on “**Advanced Composite Structures**” in the One-week online Faculty Development Programme on "Challenges and Opportunities for Research in Mechanical Engineering: Present and Future” organized by the Department of Mechanical Engineering, Karunya Institute of Technology and Science held during 20<sup>th</sup> to 24<sup>th</sup> September, 2021.
- ❖ Invited speaker for the session on “**Self-healing Materials for Structural Applications**” in the One-week online Faculty Development Programme on " Smart materials and systems for sustainable development” organized by the Department of Mechanical Engineering, JIS College of Engineering, Kalyani, West Bengal held during 28<sup>th</sup> June to 3<sup>rd</sup> July, 2021.
- ❖ Invited speaker for the session on “**Functionalization of Nano-materials for Advanced Engineering Applications**” in the One-week online Faculty Development Programme on "Recent Advances in Mechanical Science and Engineering” organized by the Department of Mechanical Engineering, Siddartha Institute of Science and Technology, Puttur, Andhra Pradesh held during 18<sup>th</sup> to 22<sup>nd</sup> November, 2020.
- ❖ Invited speaker for the webinar on “**Smart Self-Healing CFRP Composites**” organized by Parul Institute of Engineering and Technology, Parul University, Badodora, Gujrat, India

#### INSTRUMENTS HANDLED

- Universal Tensile Testing Machine, INSTRON5969
- Thermo-gravimetric Analysis (TGA, NETZSCH)
- Optical Microscope (OM)
- Fourier Transform Infra-red Spectroscopy (FT-IR, PerkinElmer)
- Micro-hardness Indenter (Omni Tech).
- Field Emission Scanning Electron Microscope (FESEM).
- Ball Milling (FITSCH)
- Wirecut EDM (Electronica)

#### LIST OF PUBLICATIONS

##### International Journals:

1. **Nazrul Islam Khan**, Sudipta Haldera, Nabajyoti Talukdar, Subhankar Das, M.S. Goyat. Surface oxidized/silanized graphite nanoplatelets for reinforcing an epoxy matrix. Materials Chemistry and Physics 258 (2021) 123851. (IF-4.094)

2. **Nazrul Islam Khan**, Sudipta Halder, Subhankar Das, M.S. Goyat. Graphitic nanoparticles functionalized with epoxy moiety for enhancing the mechanical performance of hybrid CFRP laminated composites. *Polymer Composites* 42 (2021) 678-692. (IF-3.171)
3. Subhankar Das, Sudipta Halder, **Nazrul Islam Khan**, Bappi Paul, M.S. Goyat. Assessing damage mitigation by silanized milled graphite nanoparticles in hybrid GFRP laminated composites. *Composites Part A* 132 (2020) 105784. (IF-7.664)
4. **Nazrul Islam Khan**, Sudipta Halder, Subhankar Das, Jialai Wang. Exfoliation level of aggregated graphitic nanoplatelets by oxidation followed by silanization on controlling mechanical and nanomechanical performance of hybrid CFRP composites. *Composite Part B* 173 (2019) 106855. (IF-9.078)
5. **Nazrul Islam Khan**, Sudipta Halder, Jialai Wang. "Diels-Alder based epoxy matrix and interfacial healing of bismaleimide grafted GNP infused hybrid nanocomposites". *Polymer Testing* 74 (2019) 138-151. (IF-4.282)
6. **Nazrul Islam Khan**, Sudipta Halder, M.S. Goyat. "Effect of epoxy resin and hardener containing microcapsules on healing efficiency of epoxy adhesive based metal joints". *Materials Chemistry and Physics* 171 (2016) 267-275. (IF-4.094)
7. **Nazrul Islam Khan**, Sudipta Halder & M. S. Goyat. "Influence of dual-component microcapsules on self-healing efficiency and performance of metal-epoxy composite-lap joints". *The Journal of Adhesion* 93 (2017) 949-963. (IF-2.917)
8. Pannalal Choudhury, Sudipta Halder, **Nazrul Islam Khan**, Krishna Murari Pandey, Jialai Wang. "Enhanced crack suppression ability of hybrid glass fiber reinforced laminated composites fabricated using GNP/epoxy system by optimized UDM parameters" *Ultrasonics - Sonochemistry* 39 (2017) 174–187. (IF-7.491)
9. Subhankar Das, Sudipta Halder, Arijit Sinha, Muhammad Imam, and **Nazrul Islam Khan** "Assessing Nano Scratch Behavior of Epoxy Nanocomposite Toughened with Silanized Fullerene". *ACS Appl. Nano Mater.*, 7 (2018) 3653–3662. (IF-5.097)
10. Sudipta Halder, Tankeshwar Prasad, **Nazrul Islam Khan**, Sri Ram Chauhan, M.S. Goyat "Superior Mechanical Properties of Poly Vinyl Alcohol-Assisted ZnO Nanoparticle Reinforced Epoxy Composites" *Materials Chemistry and Physics* 192 (2017) 198-209. (IF-4.094)
11. Animesh Sinha, **Nazrul Islam Khan**, Subhankar Das, Jiawei Zhang, Sudipta Halder. "Effect of reactive and non-reactive diluents on thermal and mechanical properties of epoxy resin". *High Performance Polymers* 30 (2017) 1159-1168. (IF-1.090)
12. Ikbal Choudhury, Sudipta Halder, **Nazrul Islam Khan**, Abhinav Mathur, Writuparna Nath, Aniruddha Phukan. "Effect of TETA Microcapsules on Self-Healing Ability of Dual Component Epoxy System" *Adv. Mater. Lett.* 2016, 7(10), 100-150. (IF-0.203)
13. Subhanka Das, Sudipta Halder, **Nazrul Islam Khan**. Surface Silanization of Recycled Chopped Carbon Fiber. *International Journal of Engineering, Applied and Management Sciences Paradigms* 2019 (54) 1.

#### **International Conferences:**

14. **Nazrul Islam Khan**, Sudipta Halder, Shashi Bhushan Gunjan. Bismaleimide functionalization of GNP for Diels-Alder based self-healing of epoxy nanocomposites. *International Conference on Processing and Characterization of Materials (ICPCM-2020)*, NIT Rourkela, India.

15. **Nazrul Islam Khan**, Sudipta Halder, M.S. Goyat “Tuning the size of self-healing epoxy-filled microcapsules by amending their synthesis process parameters”. **International Conference on Materials Science-2017** and accepted in **Materials Today Proceedings**.
16. **Nazrul Islam Khan**, Sudipta Halder, M.S. Goyat “Effect of emulsifier on the properties of capsules for fabricating healing enabled next generation adhesive joints” **International Conference on Surface Modification Technologies (SMT30)**.
17. **Nazrul Islam Khan**, Sudipta Halder, Shashi Bhushan Gunjan. Bismaleimide functionalization of GNP for Diels-Alder based self-healing of epoxy nanocomposites. 2<sup>nd</sup> International Conference on Processing and Characterization of Materials (ICPCM-2019), NIT Rourkela, Odisha, India.
18. **NI Khan**, S Halder, S B Gunjan, T Prasad “A review on Diels-Alder based self-healing polymer composites”. *Materials Science and Engineering* 377 (2018) 012007. **ICMMRE-2017**, SMIT, Sikkim, India.
19. S Das, **NI Khan**, S Halder. Thermo-mechanical stability of epoxy composites induced with surface silanized recycled carbon fibers. *Materials Science and Engineering* 377 (2018) 012172. **ICMMRE-2017**, SMIT, Sikkim, India.
20. Subhankar Das, Sudipta Halder, and **Nazrul Islam Khan**. Influence of acoustic cavitation mixing on tensile and fracture properties of oxidized fullerene-epoxy nanocomposites. International Conference on Nanotechnology: Ideas, Innovations & Initiatives-2017 (ICN:3i-2017) on 6–8 December 2017 at IIT Roorkee, India.

#### **National Conferences:**

21. **Nazrul Islam Khan**, Sudipta Halder, M.S. Goyat. Tuning the size of self-healing epoxy-filled microcapsules by amending their synthesis process parameters. **MRSI North-East Symposium on Advanced Materials for Sustainable Applications**.
22. **Nazrul Islam Khan**, Sudipta Halder, M.S. Goyat “Mechanical properties of epoxy composites modified with reactive and non-reactive diluents”. **RISE-2017, Research Conclave, NIT Silchar**.

#### **Patent File:**

- **Nazrul Islam Khan**, Sudipta Halder. A method of grafting of graphitic nanoplatelets with bismaleimide and furfurylamine for Diels-Alder based self-healing of CFRP laminated composites. **IN Patent (2019). Application No: 201931045436. (Published)**

#### **Book/Book Chapter Publications:**

1. **Nazrul Islam Khan**, Sudipta Halder. Self-healing fiber-reinforced polymer composites for their potential structural applications. Chapter 15 self-healing polymer-based systems (Elsevier) ISBN: 9780128184509.
2. **Nazrul Islam Khan**, Self-Healing Adhesive Joints, LAP LAMBERT Academic Publishing OmniScriptum AraPers GmbH Haroldstrade 14, D-40217 Dusseldorf, ISBN (978-620-2-05623-6).

## CARRIER ACHIEVEMENTS

- Branch topper in M.Tech (Materials and Manufacturing Technology, NIT Silchar) with 9.70 CPI.
- Qualified **GATE** in 2015. (Registration number- ME44012S2102; score: 465 and mark obtained: 43.65 out of 100).
- Recipient of Anundoram Borooah Award in the year of 2006.

## MEMBERSHIP

- Life Associate Member of Institution of Engineers (IEI, India)

## AS A REVIEWER

- Invited Reviewer of **Engineering Research Express**. IOP Publication.
- Invited reviewer of **Journal of Composite Materials**. Sage Publication.
- Invited reviewer of **Journal of Micromechanics and Microengineering**. IOP Publication
- Invited reviewer of **Polymer Composites**. Willey Publication
- Peer Reviewer of 2nd International Conference on Material Strength and Applied Mechanics (**MSAM 2019**).
- Peer reviewer of 6<sup>th</sup> Global Conference on Polymer Composite Materials (**PCM 2019**).

## SPONSORED PROJECT

- Design and fabrication of electrical efficiency improved solar panel integrated with microencapsulated phase change material. Submitted to Core Research Grant (CRG, SERB, DST, Reference No. : 182021010147). Amount: 34,84,712/-.
- Self-healing Enabled Similar or Dissimilar Adhesive Joints with Enhance Interfacial Properties. Start-Up Research Grant (SRG, SERB, DST). Amount: 26,98,872/- (Accepted for Evaluation)-PI.

## TRAINING ATTENDED

- Projects in Machine Learning: Beginner to Professional (15.5h UdeMy).
- Attending Digital Manufacturing Course by Autocad Fusion 360-1 Year.
- Underwent an industrial training at **Indian Oil Corporation Ltd.** (BRPL), Chirang, Assam, in the Central Workshop Department from **15-06-2012** to **17-07-2012**.
- Underwent training at **New Guwahati Diesel Shed, Guwahati-21, N.F. Railway** from **15-06-2011** to **30-06-2011**.
- Two months training course on **POWER PLANT FAMILIARISATION** conducted by **National Power Training Institute, North Eastern Region, Guwahati** during the period from 28-January-2013 to 26-March-2013.

## SHORT TERM COURSE ATTENDED

1. **Six Months** short term course on Plastics Product & Mould Design/Development using CAD/CAM software.
2. One week short term course on **Renewable in Science and Engineering**.
3. One week short term course on **Joining of Materials**.
4. One week short term course on **Failure Analysis of Engineering Materials**.

5. One week workshop on **Advanced Joining Technologies**.
6. One week workshop on **Computational Mechanics and Modelling (CMM 2016)**.
7. Two-day workshop on **Internet of Things**.
8. One day workshop on **MEMS**.

#### PERSONAL DETAILS

**Name** : NAZRUL ISLAM KHAN  
**Father's Name** : Rafikul Islam  
**Date of Birth** : 31<sup>st</sup> December 1990  
**Sex** : Male.  
**Marital Status** : Unmarried  
**Nationality** : Indian.  
**Hobbies** : Reading books, playing cricket and football, listening to soft music, TV Shows, Watching movies, etc.  
**Languages** : English, Hindi, Assamese and Bengali.

**Permanent Address** : Vill-Betbari, P.O.-Barbala, P.S.-Barpeta, Dist.-Barpeta, State-Assam, PIN.-781316.

**Present Address** : Ashraya Faculty Quarter-12, GMR Institute of Technology, Rajam. Srikakulam, Andhra Pradesh, India-532127.

#### RESEARCH REFEREES

- Dr. Sudipta Halder, Assistant professor, Dept. of ME, NIT Silchar, Assam, India- 788010.  
Email ID: [sudiptomec@gmail.com](mailto:sudiptomec@gmail.com) Contact No- +919435387403
- Prof. Promod Kumar Patowari, Professor, Dept. of ME, NIT Silchar, Assam, India- 788010.  
Email ID: [ppatowari@mech.nits.ac.in](mailto:ppatowari@mech.nits.ac.in) Contact No- +919435523391
- Dr. Sumit Bhowmik, Assistant professor, Dept. of ME, NIT Silchar, Assam, India- 788010.  
Email ID: [sumit@mech.nits.ac.in](mailto:sumit@mech.nits.ac.in) Contact No-+918011886455
- Prof. Fazal A. Talukdar, Professor, Dept. of ECE, NIT Silchar, Assam, India- 788010.  
Email ID: [fazal@ece.nits.ac.in](mailto:fazal@ece.nits.ac.in) Contact No-+919435071119

#### DECLARATION

**I do hereby declare that all the information furnished above is true to the best of my knowledge.**

**Date: 15/11/2021**

*Nazrul Islam Khan.*  
**(NAZRUL ISLAM KHAN)**