

Dr. RAHUL RAMESH KULKARNI

Assistant Professor - Department of Forge Technology
National Institute of Advanced Manufacturing Technology
[Formerly, National Institute of Foundry and Forge Technology]
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Google Scholar Profile: <https://scholar.google.com/citations?user=q3ZLsmwAAAAJ&hl=en>

Web Page: <https://sites.google.com/view/rahulrkulkarni>

Education

- July, 2010 to August, 2016: **Ph.D.**, Department of Metallurgical Engineering and Materials Science, Indian Institute of Technology Bombay, Mumbai, India.
Thesis: Magnesium-Aluminum-Zinc (AZ80) Alloy: Microstructure Evolution and Flow Properties
- July, 2006 to May 2008: **M.Tech.**, Materials Engineering, National Institute of Technology Karnataka, Surathkal, India. [Gold Medal]
Thesis: Low Temperature Studies on Stainless Steel 304LN TIG Welds
- September, 2000 to July 2004: **B.E.**, Mechanical Engineering, Shivaji University Kolhapur, Maharashtra, India. [First class with distinction]

Experience (Teaching and Industry)

- August, 2019 to Present: **Assistant Professor**, Department of Forge Technology, National Institute of Advanced Manufacturing Technology [Formerly, National Institute of Foundry and Forge Technology], Ranchi, Jharkhand, India.
- July, 2018 to July, 2019: **Tenure Basis Faculty**, Department of Mechanical Engineering, Veermata Jijabai Technological Institute, Mumbai, Maharashtra, India.
- July, 2015 to November, 2017: **Assistant Professor**, Department of Mechanical Engineering, Don Bosco Institute of Technology, Mumbai (Affiliated to Mumbai University), Maharashtra, India.
- July 2010 to May, 2016: **Research Scholar and Teaching Assistant**, Department of Metallurgical Engineering and Materials Science, Indian Institute of Technology Bombay, Mumbai, Maharashtra, India.
- December, 2008 to July, 2010: **Executive-Technology Development Center**, Heavy Engineering Division, Larsen & Toubro Limited, Mumbai, Maharashtra, India.
- February, 2005 to February, 2006: **Graduate Apprentice**, Atlas Copco (India) Ltd. Pune, Maharashtra, India.

Research Interest

Deformation Behavior of Materials

Thermo-mechanical Processing

Materials Engineering

Manufacturing Processes: Deformation/Forming processes

Fracture and Failure Analysis

Subjects/Courses Taught/Teaching

1. Quality Assurance and Inspection Methods (Master of Technology Students, National Institute of Advanced Manufacturing Technology, 2 hour/week)
2. Research Methodology and IPR (Master of Technology Students, National Institute of Advanced Manufacturing Technology, 1 hour/week)
3. Technology of Non-Ferrous Forging (Master of Technology Students, National Institute of Advanced Manufacturing Technology, 1 hour/week)
4. Engineering Science (Advanced Diploma Course in Foundry Technology students, 3 Credits-Theory and 1 Credit-Practical)
5. Engineering Science (Advanced Diploma Course in Forge Technology students, National Institute of Advanced Manufacturing Technology, 3 Credits-Theory and 1 Credit-Practical)
6. Forging of Non-Ferrous and Special Alloys (Advanced Diploma Course in Forge Technology students, National Institute of Advanced Manufacturing Technology, 3 Credits-Theory and 1 Credit-Practical)

Previously Taught Subjects/Courses

1. Computational Methods (Master of Technology Students, Veermata Jijabai Technological Institute, 4 credits) (Odd Semester, July 2018)
2. Theory of Elasticity, Plasticity and Material Behavior (Master of Technology Students, Veermata Jijabai Technological Institute, 3 credits) (Odd Semester, July, 2018)
3. Research Methodology (Master of Technology Students, Veermata Jijabai Technological Institute, 3 credits) (Even Semester, January, 2018)
4. Failure analysis and Design (Bachelor of Technology Students, Veermata Jijabai Technological Institute, 3 Credits) (Even Semester, January, 2018)
5. Technical Seminar (Master of Technology Students, Veermata Jijabai Technological Institute, 2 credits) (Even Semester, January, 2018)
6. Production Processes (Bachelor of Engineering Students, DBIT: Mumbai University, 4 credits) (Odd Semester, July, 2015, July, 2016)
7. Material Technology (Bachelor of Engineering Students, DBIT: Mumbai University, 3 Credits Theory and 1 Credit Practical, Odd/Even Semester, January, 2016, January, 2017, July 2017)
8. Strength of Materials (Bachelor of Engineering Students, DBIT: Mumbai University, 1 Credit Practical) (Odd Semester, July, 2016, July, 2017)
- Subjects/Courses Assisted at post-graduate and at under-graduate level in Indian Institute of Technology Bombay (IIT Bombay) (July 2010 – July 2014)
 1. Engineering Metallurgy (B.Tech.: Mechanical Engineering)
 2. Mechanical Testing Laboratory (B.Tech.: Metallurgical Engg. & Mat. Sci.)
 3. Heat Treatment Laboratory (B.Tech.: Metallurgical Engg. & Mat. Sci.)
 4. Thermo-mechanical Processing and Forming of Steel (M.Tech.)

Project/Thesis Guidance

1. B.E./B.Tech. (Undergraduate level): 01 (Mechanical Engg.)
2. M.Tech. (Post-graduate level): 02 (Completed), 01 (Ongoing)
3. PhD: 01 (Ongoing) (Forge Technology)

Position Held/Participation in Administrative/Institute/ Academic Activities

- Warden – M. Visveswaraya Chhatrawas (Since February 2022).
 - Members of various committees at Institute Level and Departmental Level.
 - External Examiner for M.Tech. thesis in the other departments.
 - Invigilators for internal examinations, university examinations and external examinations.
 - Involved in the activities related to laboratory development.
- In previous Appointments
- Occasional replacement for evaluation of tutorials for B.Tech. courses as Numerical Methods (Third year B.Tech.), Metallurgy (Second year B.Tech.) at VJTI Mumbai.
 - Employability test coordinator (for third year and final year B.Tech. students, December 2018) at VJTI Mumbai.
 - Occasional replacement for Post graduate examination coordinator in the department of Mechanical Engineering at VJTI Mumbai.
 - Evaluation of workshop shop jobs and Co-instructor in Auto-CAD laboratory of Engineering graphics for First year B.Tech. Students at VJTI Mumbai.
 - Member of document verification Committee for the students admitted in the Academic Year 2018-19 at VJTI Mumbai.
 - Additional Marshal for Mechanical Engineering for the VJTI Convocation Function 2019.
 - Elective allotment coordinator (Academic Year 2015-16, 2016-17, (2017-18 odd semester)) at Don Bosco Institute of Technology Mumbai.
 - Member of Internal Squad for Mumbai university examination May-June 2017 at Don Bosco Institute of Technology Mumbai.
 - Junior Supervisor, Examiner for Mumbai university examination for the subject- Material Technology, Production Process-III (November 2015, May 2016, November 2016, June 2017, November 2017) at Don Bosco Institute of Technology Mumbai.
 - Class teacher of SE (Mechanical) at Don Bosco Institute of Technology Mumbai.

Publications

Journal /Article /Book Chapters:

1. Ashutosh Ranjan, Ashvani Kumar, **Rahul Kulkarni** (2022): Studies on Annealing Kinetics of Cold Forged AA6082, accepted for publication in Lecture Notes in Mechanical Engineering (Scopus Indexed)
2. **Rahul Ramesh Kulkarni**, Ashvani Kumar, Ashutosh Ranjan (2022): The Methods of Processing to Produce Fine Grain Structure in Magnesium Alloys: An Overview, selected for publication in AIP Proceedings (Scopus Indexed)
3. **Kulkarni R.R.**, Mate S., Joseph S., D'sa N. (2021): Effect of Heat Treatment on Microstructure and Room Temperature Mechanical Properties in 55Si7 Spring Steel, In: Agrawal R., Jain J.K., Yadav V.S., Manupati V.K., Varela L. (Eds.) *Recent Advances in*

Smart Manufacturing and Materials. Lecture Notes in Mechanical Engineering. Springer, Singapore. [Online ISBN: 978-981-16-3033-0, Print ISBN: 978-981-16-3032-3]
DOI: https://doi.org/10.1007/978-981-16-3033-0_7 (Scopus Indexed)

4. **Rahul R. Kulkarni**, Nithyanand Prabhu, Bhagwati P. Kashyap (2017): Microstructure evolution during sand casting in AZ80 Mg alloy, *VJER-Vishwakarma Journal of Engineering Research*, 3(1) pp. 198-204. [ISSN No: 2456-8465]
5. **Rahul R. Kulkarni**, Nithyanand Prabhu, Peter D. Hodgson, Bhagwati P. Kashyap (2016): Temperature Dependent Flow Behavior and Microstructural Evolution during Compression of As-cast Mg-7.7Al-0.4Zn, *Journal of Materials Engineering and Performance*, 25 (10) pp. 4145-4156.
DOI: <https://doi.org/10.1007/s11665-016-2269-z> (Science Citation & Scopus Indexed)
6. **Rahul Ramesh Kulkarni**, Nithyanand Prabhu, Peter D. Hodgson, Bhagwati Prasad Kashyap (2014): Kinetics of γ -Mg₁₇Al₁₂ Phase Dissolution and its Effect on Room Temperature Tensile Properties in as-cast AZ80 Magnesium Alloy, *Solid State Phenomena*, 209 pp 207-211.
DOI: <https://doi.org/10.4028/www.scientific.net/SSP.209.207> (Scopus Indexed)
7. Rajendra Doiphode, **Rahul Kulkarni**, S.V.S. Narayana Murty, Nithyanand Prabhu, Bhagwati Prasad Kashyap (2013): Effect of Severe Caliber Rolling on Superplastic Properties of Mg-3Al-1Zn (AZ31) Alloy, *Materials Science Forum*, 735 pp 327-331.
DOI: <https://doi.org/10.4028/www.scientific.net/MSF.735.327> (Scopus Indexed)
8. **Kulkarni R.R.**, Prabhu N., Hodgson P.D., Kashyap B.P. (2012): Phase dissolution of γ -Mg₁₇Al₁₂ during homogenization of as-cast AZ80 Magnesium alloy and its effect on room temperature mechanical properties, In: Mathaudhu S.N., Sillekens W.H., Neelameggham N.R., Hort N. (Eds.), *Magnesium Technology 2012*. The Minerals, Metals & Materials Society, Springer, Cham. [Online ISBN: 978-3-319-48203-3, Print ISBN: 978-3-319-48571-3] DOI: https://doi.org/10.1007/978-3-319-48203-3_96 (Scopus Indexed)

Conference:

1. **Rahul R. Kulkarni**, Nithyanand Prabhu, Peter D. Hodgson, Bhagwati P. Kashyap: Temperature effect on second phase (Mg₁₇Al₁₂) and flow behavior in as-cast AZ80 Mg alloy, *The proceedings of the International Conference on Emerging Material Technology ICEMT 2013* April 8-10, 2013 Jabalpur, Madhya Pradesh, India pp.1-6. [Conference information page: <https://ggits.org/international-conference-icemt-2013/>]
2. **Rahul R. Kulkarni**, Nithyanand Prabhu, Peter D. Hodgson, Bhagwati P. Kashyap: Effects of homogenization and rolling on microstructure and tensile properties of Mg-8.5Al-0.5Zn (AZ80) alloy at room temperature, *Proceedings of the 3rd Asian Symposium on Materials & Processing ASMP 2012*, IIT Madras, Chennai, 30-31, August 2012, p. NDTC_P1. [ISBN:978-93-80689-09-8]
[Conference information page: https://mme.iitm.ac.in/sbakshi/ASMP2012_Brochure.pdf]
3. **Kulkarni Rahul Ramesh**, Jagannath Nayak, K. R. Hebbar: Low temperature embrittlement studies on stainless steel 304LN TIG welds, *Conference Proceeding*,

NCAME'09 (National Conference on Advances in Mechanical Engineering-2009), Mumbai pp. 282-285.

4. Krishnan Sivaraman, **Rahul Kulkarni**, Jaydeep Joshi: Lamellar Tearing - Causes and Prevention, *Design Symposium-2008*, Larsen & Toubro Limited, pp. 1-8.

Paper Presented at International Conferences

1. Ashutosh Ranjan, Ashvani Kumar, **Rahul Kulkarni**: Studies on Annealing Kinetics of Cold Forged AA6082, International Conference on Futuristic Advancement in Materials, Manufacturing and Thermal Sciences (*IC-FAMMT 2022*) at Institute of Infrastructure, Technology, Research and Management, Ahmedabad (An Autonomous University established by Government of Gujarat), January 20-22, 2022.
2. **Rahul Kulkarni**, Ashvani Kumar and Ashutosh Ranjan: An Overview on Processing Methods to Produce Fine Grain Structure in Magnesium Alloys, Virtual International Conference on Product Design, Development and Deployment (*PD³-2021*) at Vellore Institute of Technology (Recognized as Institution of Eminence (IoE) by Government of India), Vellore, September 11-12, 2021.
3. **Rahul Kulkarni**, Sumit Mate, Stephen Joseph and Nigel D'sa: Dependency of Heat Treatment on Microstructure and Room Temperature Mechanical Properties in 55Si7 Spring Steel, International Conference on Evolution in Manufacturing (*ICEM 2020*) at Department of Mechanical Engineering MNIT Jaipur in association with NIT Uttarakhand and NIT Warangal, December 10-12, 2020.
4. **Rahul R. Kulkarni**, Nithyanand Prabhu, Bhagwati Kashyap: Microstructure evolution during sand casting in AZ80 Mg alloy, 1st International Conference on Recent Trends in Engineering and Technology (*ICRTET-2017*) at Vishwakarma Institute of Information Technology, Pune, Maharashtra, India in association with Savitribai Phule Pune University, Pune Maharashtra, India, February 17-18, 2017.
5. **Rahul R. Kulkarni**, Nithyanand Prabhu, Peter Hodgson, Bhagwati Kashyap: Effects of Solutionizing and Deformation on Morphology of second phase in as cast AZ80 Mg alloy, International Conference on Emerging Material Technology (*ICEMT-2013*) at Jabalpur, Madhya Pradesh, India, April 8-10, 2013.
6. **Rahul R. Kulkarni**, Nithyanand Prabhu, Peter Hodgson, Bhagwati Kashyap: Effects of homogenization and rolling on microstructure and tensile properties of Mg-8.5Al-0.5Zn (AZ80) alloy at room temperature, 3rd Asian Symposium on Materials & Processing (*ASMP 2012*) at Indian Institute of Madras, Chennai, August 30-31, 2012.
7. **Rahul R. Kulkarni**, Nithyanand Prabhu, Peter Hodgson, Bhagwati Kashyap: Temperature dependence of flow behavior and microstructure evolution during compression of as-cast 7.7Al-0.4Zn-Mg alloy, 16th International conference on strength of Materials (*16th ICSMA-2012*) at Indian Institute of Science Bangalore August, 19-24, 2012.
8. Nithyanand Prabhu, Bhagwati Kashyap, Peter Hodgson, **Rahul Kulkarni**, Pabitra Palai, V Srinivas: The effect of Die-Shape and die Parameters in ECAP on the microstructure and flow Properties of Some 2- Phase alloys, The Minerals, Metals & Materials Society (*TMS*

2012) at 141st Annual Meeting and Exhibition at Orlando, Florida, United States of America (USA) March, 11-15, 2012.

Paper presented at National Conference/Workshops

1. Krishnan Sivaraman, **Rahul Kulkarni**, Jaydeep Joshi: Lamellar Tearing, *Design symposium 2008* at FPEX and CGPP Leadership team, Larsen & Toubro Mumbai based on the theme of Business Excellence through Knowledge sharing, 2008.
2. **Rahul R. Kulkarni**: Laser Machining, **National conference in Mechanical Engineering** in G.H. Rasoni College of Engineering, Nagpur, Maharashtra, India, 2004.

Certification completed/Workshop attended

1. Course: Module #1: Orientation towards Technical Education and Curriculum Aspects, of National Initiative for Technical Teachers Training (NITTT), All India Council of Technical Education, September 2021.
2. Course: Module #4: Instructional Planning and Delivery, of National Initiative for Technical Teachers Training (NITTT), All India Council of Technical Education, September 2021.
3. Course: Module #6: Student Assessment and Evaluation of National Initiative for Technical Teachers Training (NITTT), All India Council of Technical Education, September 2021.
4. Course: Module #3: Communication Skills, Modes and Knowledge Dissemination, of National Initiative for Technical Teachers Training (NITTT), All India Council of Technical Education, February 2021.
5. A Short-term Course: Advanced and Futuristic Manufacturing Process organized by National Institute of Foundry and Forge Technology, Ranchi September 25-29, 2021.
6. NPTEL (National Programme on Technology Enhanced Learning) Online Certification passed with Elite plus Silver and with AICTE Faculty Development Program: Thermo-mechanical and Thermo-chemical Processes, funded by MHRD India, September 2020-November 2020.
7. NPTEL (National Programme on Technology Enhanced Learning) Online Certification passed with Elite plus Silver and with AICTE Faculty Development Program: Failure Analysis and Prevention, funded by MHRD India, February 2020-April 2020.
8. Webinar: Engineering Skills for The Year 2020 and beyond, organized by Department of Materials Science and Technology, School of Natural and Applied Sciences Maulana Abul Kalam Azad University of Technology, West Bengal, India, June, 25, 2020.
9. Faculty Development Program: Student Induction (FDP-SI), at Central University of Jharkhand, Ranchi organized by All India Council for Technical Education (AICTE), January, 20-22, 2020.
10. Basic Course on Process Instrumentation at Siemens-SITRAIN Kalwa, Siemens Limited Thane, Mumbai. September, 14-18, 2018.
11. Advances in Composites in Auto Industries, Organized by International Conference on Emerging Materials Technology, Jabalpur, M.P. India., 8-10 April, 2013.
12. Advanced Characterization Techniques, Organized by 4th National symposium for Materials Research Scholars, IIT Bombay. May,3- 5, 2012.

13. Entrepreneurship Development, organized by Mechanical Engineering Student Association, Department of Mechanical Engineering, WIT Solapur, Maharashtra. India, March, 06, 2004.

Recognition

1. Honors/Awards

- 1) **Best Paper Presentation in session 5:** awarded for paper presentation for the topic: Dependency of Heat Treatment on Microstructure and Room Temperature Mechanical Properties in 55Si7 Spring Steel, International Conference on Evolution in Manufacturing (*ICEM 2020*), December 10-12, 2020, Department of Mechanical Engineering MNIT Jaipur in association with NIT Uttarakhand and NIT Warangal.
- 2) **Certificate of Appreciation** for delivering talk titled “Role of Materials in Failure of Mechanical Components and Fractography” in the *International Virtual Workshop on Advancement in Design and Materials for Product Development* at school of Mechanical Engineering-VIT-Vellore (Recognized as Institution of Eminence (IoE) by Government of India), October 3-4, 2020.
- 3) **Gold Medal (University) M.Tech. (Materials Engineering):** Awarded by *National Institute of Technology Karnataka*, Surathkal on January 31, 2009.
- 4) **Prof. K.R. Hebbar Gold Medal M.Tech. (Materials Engineering):** Awarded by *National Institute of Technology Karnataka*, Surathkal on January 31, 2009.
- 5) **Third Prize in essay competition** on Subject: Uniqueness of Iron and its Alloys, Organized by **Indian Institute of Metals Surathkal Chapter:** Awarded on April 16, 2007.
- 6) **Third prize in essay competition** organized by ‘**MESA**’ (**Mechanical Engineering Student Association**) at undergraduate level: Awarded on April 26, 2004.

2. Talk delivered

- Topic: Role of Materials in Failure of Mechanical Components and Fractography in the *International Virtual Workshop on Advancement in Design and Materials for Product Development* at school of Mechanical Engineering-VIT-Vellore (Recognized as Institution of Eminence (IoE) by Government of India), October 3-4, 2020. [You tube Link: <https://youtu.be/2c-muocO9dY>]

3. Membership

- Life Member of Indian Institute of Metals (Since July 2017)

4. Other Services

- Reviewer: Journal of Materials Engineering and Performance, Springer.
- Member of Technical Committee and Reviewer: Virtual International Conference on Product Design, Development and Deployment (*PD³-2021*) at Vellore Institute of Technology, Vellore.

Vocational Training

- Foundry & Forge Division, Hindustan Aeronautics Ltd. Bangalore, Karnataka. [May’07 –June’07]
- Kirloskar Brother Limited, Kirloskarvadi, Sangli. Maharashtra. [July’03 – July’03]

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

Kulkarni Rahul R., PhD (IIT Bombay)