

Dr. AMIT SIDDHARTH SHARMA

Post-Doctoral (South Korea), PhD, MTech, MSc
HEAD, R&D RBL Natural Resources Ltd Udaipur, Rajasthan
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Key Skills

Basic Research & Analysis

Concept Development

Process Planning

Technology Adaptation

Product Realization

Technical Support

Customer Interaction

Quality Framework (ISO 9001
& ISO 17025)

Training & Capacity Building

Laboratory Management



Profile Summary

- Trained Materials Scientist and accomplished R&D leader with >13 years of experience in basic research, product development and technical support
- Possess expertise in broad areas of **materials science** (minerals, ceramics, metals, and their composites, structure-property correlation), **minerals processing and quality control** in bauxite, silica, kaolin, bentonite, iron ore

Industrial projects:

- Developed new products as well as upgraded performance for clay minerals (bentonite, kaolin, silica) for various industrial applications
- Twinning-induced Plasticity (TWIP) Steels for automotive applications

Industry-academia projects:

- Research experience in South Korea:** Development of SiC/SiC_f-based ceramic composites for nuclear irradiation applications
- Development of metal-ceramic (Cu-TiB₂) composites for tribological applications
- Indo-US SERIUS project:** Development of architecturally graded solar absorber coatings with tunable high absorptance and low emittance (such as TiB₂ on glass, TiB₂ on SS 310)

Published 22 research papers in peer-reviewed journals, scientific presentation in 15 conferences

[Link](#)

PROFESSIONAL EXPERIENCE (ANNEXURE I)

~13 YRS

RBL Natural Resources Ltd, Udaipur HEAD, R&D	Jun'26-Contd...
Innovation & Knowledge Centre, Ashapura Minechem Limited, Bhuj Scientist (Project Team Leader)	Jul'19-Jun'26
Ashapura Guinea Resources SARL, Ashapura Group of Industries Head Quality (Bauxite and Iron ore) [On 6-month Foreign Deputation]	Apr'24-Sep'24
Ashapura Guinea Resources SARL, Ashapura Group of Industries Scientist [On 2-month visit for National Geology Laboratory Set-up]	Industrial Experience Aug'19-Oct'19
Kaolin Division, Padhdhar Plant, Ashapura Minechem Limited, Bhuj Manager (Product development)	Oct'18-Jun'19
R&D Division, TATA Steel, Jamshedpur Research Assistant	Jul'07-May'08
Department of Materials Science and Engineering, Yeungnam University, Republic of Korea Foreign Research Professor	Post-PhD Experience May'15-Oct'18
	Jul'14-Apr'15



Academic Credentials

PhD	Materials Science and Engineering, Indian Institute of Technology Kanpur, UP	2013
Thesis defended- July, 2013 (Thesis submitted- April, 2013)		
Thesis: Microstructure development and wear resistance of spark plasma sintered metal-ceramic (Cu-TiB ₂) nanocomposites		
MTech	(First class) New Materials and Processing Technology, Birla Institute of Technology, Ranchi, Jharkhand	2008
MSc	(First class) Physics, Bareilly College Bareilly, MJP Rohilkhand University, UP	2005
BSc	(First class) Physics and Maths, Bareilly College Bareilly, MJP Rohilkhand University, UP	2003



Scientific Expertise

- Minerals processing (Comminution, beneficiation flowchart)
- Mechanical properties (Strength, elastic modulus, hardness, fracture toughness) of materials
- Tribological (wear and friction) properties of materials
- Rheological (viscosity) properties
- Materials/analytical characterization
- Sintering
- Processing-Microstructure-Property correlation
- Polymeric additives for viscosity modifier & binder formulation
- Nanocomposites
- Clay (Bentonite, Kaolin) and industrial (Bauxite, silica, iron ore) minerals for industrial applications



Product & Business Development Experience

- Bentonite for Iron ore palletization, Foundry, Desiccant, Drilling, Civil, Agricultural grades etc.
- Kaolin for Paper, Paint, Rubber, Plastic etc.
- Silica for Construction grade



Team Management & Reporting

- RBL Natural Resources Ltd, Udaipur (Rajasthan): Responsible for Group R&D and Plant QA/QC; reporting to Group CEO
- Innovation & Knowledge Centre, Ashapura Minechem Limited: Leading a team of 4 Junior Scientists; reporting to Group Head R&D
- Kaolin Division, Padhdhar Plant, Ashapura Minechem Limited: Product development, team of 4 chemists; reported to Plant Head



Awards/Recognitions

- October 2024: Ashapura Group of Industries CONQUER award-Rising Star category
- October 2023: Ashapura Group of Industries CONQUER award-Super Star category
- July 2008-June 2013: Senior Research Fellow, IIT Kanpur, UP
- July 2006-May 2008: GATE Fellowship from MHRD, Government of India
- Qualified **GATE 2015** in Metallurgical Engineering: AIR-538, Score-421
- Qualified **GATE 2014** in Metallurgical Engineering: AIR-413, Score-446
- Qualified **GATE 2007** in Physics: AIR-503, Score-366
- Qualified **GATE 2006** in Physics: AIR-543, Score-357
- Research recognition award: IIT Kanpur cash award of Rs 20,000/- for research publications
- Swarna Jayanti Fellowship from Indian Institute of Metals to attend an international conference in Rhodes, Greece in August 2012

Certifications

- April 2025: Attended 2-day Group level training on "Train the Trainer"

- May 2023: ISO 9001:2015 Quality Management Systems
- May 2021: ISO/IEC 17025: 2017- General Requirements For (Laboratory Quality System & Internal Audit) the Competence of Testing & Calibration Laboratories: Quality Council of India
- January 2020: Requirements of ISO/IEC 17025:2017 on Measurement Uncertainty, Decision Rule and Risk Assessment by Aagam Laboratories, Gujarat

Group level E-trainings

- Advanced Power Point Presentations
- Interviewing Skills
- Training Need Analysis & Skill Gap
- Leadership & Managerial Skills
- Effective Mail Management using MS Outlook



Personal Details

- **Date of Birth:** 05 March 1982, **Lingual proficiency:** English and Hindi, **Native:** Uttar Pradesh (Bareilly)
- **Physical and Mental Wellness:** Chess, Badminton, Swimming, Volleyball and Yoga
- **Countries visited:** Greece, South Korea, USA, Republic of Guinea



Organizational Experience (Detailed Work Experience)

Innovation & Knowledge Centre, Ashapura Minechem Limited, Bhuj

Jul'19-Contd.

A. Scientist (Project Team Leader)

Internal stakeholders:

- New product development for bentonite division for domestic as well as international markets
- Projects-related materials and capacity planning for resources (MRP/CRP), implementation, and supervision of associated sub-tasks
- Budgetary requirement of the department on monthly as well as annual basis
- Evaluation of techno-commercial aspects and benchmarking against competitor products
- Manpower utilization, performance monitoring and review (PMS) of team members on monthly and annual basis against the KRA and company business goals
- Pilot plant trials: Develop pilot plant protocols, scale-up studies; conducted root-cause analysis for process/ product failures and recommended corrective actions

External stakeholders:

- Mines: Quality assessment of bentonite mines and assessing suitability as per projects requirements
- Marketing: Collaborated with marketing team for performance validation at customer end, product positioning, develop technical datasheets
- Plant teams: Coordination for plant scalability studies, technical support, interlaboratory testing and IRM generation
- Customers: Performance validation at customer end in coordination with marketing team
- Management review (with Group MD): Presenting key findings of projects and brainstorming on way forward in bi-weekly meetings



Key Achievements

- Developed IOP grade product: Performance validation at customer end-Sample accepted
- Developed a foundry grade product with better thermal durability properties: Successful performance validation at customer ends
- Developed a desiccant grade specialty product: Sample accepted
- Agro-grade bentonite: Field and farm trials conducted, Coordinated project feasibility for arid regions with ICAR-CAZRI, Bhuj
- Development and validation at Lab and plant level of Graphene-incorporated building materials

B. Additional responsibility: Analytical + ISO accreditation

- ISO/IEC 17025:2017: Designated technical manager (TM) for testing for ~150 parameters of Clay and allied minerals
- Key responsibilities: Analytical method validation, Estimation of measurement uncertainty, Customer orientation, Maintaining NABL compliance
- Facility coordinator and hands-on experience: XRD, WDXRF and EDXRF, particle size analyzers (Malvern and Sedigraph), Organic Elemental Analyzer (CNHSO), ICP-OES, Zeta potential, SEM, TG-DSC, BET surface area, and allied equipment (fumehood, industrial gases, chillers, furnaces, oven, LN2 etc.)
Hands-on experience (PhD + Post-PhD): TEM, SEM, XRD, Spark Plasma Sintering, Laser Surface Profilometer, Atomic Force Microscope, Tubular Furnace, Planetary Ball Milling, Tribometers (fretting and sliding modes), Hardness testers, Metallography



Key Achievements

- Successfully defended 2 external audits as NABL Technical Manager

C. Additional responsibility: Safety coordinator

- Skilled in hazard identification and risk analysis, incident investigation, safety inspection
- Managed reporting of near misses, incidents, and conducted root cause analyses to prevent recurrence
- Supported site safety team in hazard identification and PPE compliance checks
- Maintained records of safety incidents, training attendance, and inspection checklists
- Coordinated for Safety training and audit from external agency (Sri Sai Safety Solutions, Vadodara) in Jan 2025; non-conformances raised were addressed, led CAPA initiatives
- Facilitated NSCI E-learning training for 02 nos. staff on Chemical Safety and Industrial Safety
- Safety awareness: Implemented sharing of a daily pictorial message on Group email to all R&D staff



Key Achievements

- Planned and conducted an Occupational Safety and Health audit (as internal lead auditor)
- Drafted and implemented an EHS calendar

D. Additional activity: Training & Capacity Building

- Central coordinator for Ashapura Learning Forum, a Group Level program
- Impact assessment and evaluation of pre- and post-training KPIs
- Focused on enhancing workforce competencies, upgrading human capital and knowledge management
- A total of 20 customised trainings were coordinated over a year
- Expert trainer for 4 nos. trainings

Ashapura Guinea Resources SARM, Ashapura Group of Industries
Head Quality (Bauxite and Iron ore) *[On 6-month Foreign Deputation]*

Apr'24-Sep'24

Internal stakeholders:

- Managed a team of 15 quality engineers, chemists, and field inspectors
- Supervised laboratory sample preparation (crushers, milling) and testing (chemical composition, moisture, LOI) and ensured timely reporting to operations
- Designed SOPs for laboratory testing, facilitated bauxite IRMs and CRMs for improved accuracy and reproducibility
- Coordinated with geology team for borehole sampling and testing: Played a key role in field sampling, ore classification, quality verification, maintaining daily quality reports
- Coordinated with mining team to formulate ratios for ore blending to maintain overall quality
- Coordinated with logistics team: Supervised barge-wise loading during shipments for maintaining barge-wise as well as overall shipment quality
- Analytical and Safety training of the Indian chemists and French-speaking local manpower
- Manpower recruitment: Interviewed and hired Indian-origin chemists (05 nos.) for different locations in Guinea

- Budget formulation: Mapped the analytical requirements (consumables and non-consumables) of the laboratory at different units, coordinated with Guinean + Mumbai purchase and logistics teams, with vendor for IQ/OQ/PQ and AMC for XRF units
- ISO/IEC 17025:2017 accreditation: Mapped the technical and financial aspects and oversaw the overall process; key activities are documentation of MSPs, personnel trainings, Bauxite CRMs and IRMs acquisition, pre-audit readiness and on-site audit of team visiting from neighboring country (Cote d'Ivoire)

External stakeholders:

- Customer orientation: Showcasing the QA/QC in the ore supply chain from mines to port, rigorous quality testing at laboratory, truck-wise transport and barge loading
- Liaised with customer- and Ashapura-appointed external agencies (CSIC and Bureau Veritas) for barge-wise and overall shipment sampling and testing
- Conducted root cause analysis on quality non-conformities among mines transported, barge-wise and shipment and led CAPA initiatives (mainly focusing on sampling)
- Oversaw third-party audits and maintained full compliance with safety and social (HR) standards as prevalent in Guinea (West Africa)

 Key Achievements

- Led QA/QC operations across a ~1,500,000 MT bauxite exports and ~90,000 MT iron ore exports to China
- Instrumental in achieving ISO 17025: 2017 accreditation within 12 months
- Reduced sampling errors by 30% through redesigned SOPs and staff retraining

Ashapura Guinea Resources SARL, Ashapura Group of Industries

Aug'19-Oct'19

Scientist [On 2-month visit for Set-up of National Geology Laboratory, Rep. of Guinea, Africa]

- Coordinated procurement and installation of sample preparation facility and analytical instruments (ICP-OES, XRF, PSD-Malvern, XRD, UV-Vis spectrophotometer)
- Oversaw IQ/OQ/PQ procedures for the analytical instruments
- Imparted training to 15 nos. analysts

 Key Achievements

- Laboratory establishment got credibility to Ashapura CSR initiatives
- Helped in mining business expansion of Bauxite and Iron ore

Kaolin Division, Padhdhar Plant, Ashapura Minechem Limited, Bhuj

Oct'18-Jun'19

Manager (Product development)

- Resource classification: Led technical evaluation of raw clay deposits and collaborated with geology and mining teams for deposits in Kutch region
- Process optimization: Focussed on delamination, hydrocycloning, calcination, and decantation operations for product development based on brightness, % fraction of < 2 µm and % amorphous
- Designed and implemented pilot-scale testing for particle size distribution, brightness, rheology, and fineness (Hegman gauge)
- Engaged with R&D, RM sourcing, production and marketing teams for product development
- Conducted market analysis for sustainable fillers, leading to development of metakaolin-based pozzolanic additives
- Technical support: Handled customers complaint with analytical problem-solving such as quantification of amorphous phase in metakaolin products via XRD technique
- Created technical and SDS documents for the proposed products

 Key Achievements

- Developed new grades for paper, rubber and ceramics segments

- Worked on absorber coatings for concentrated solar power (CSP) applications having high absorptance and low emittance
- Deposition of multilayered graded ceramic (TiB₂, SiC) coatings on various substrates (glass, SS 310) utilizing dip-coating and sol-gel route
- Physical, chemical, microstructural characterization of coatings and its peel-off behavior

- Literature review on twinning- and transformation-induced plasticity aspects in steels
- Contributed for the sample preparation and characterization for microscopy and mechanical tests
- Learned XRD data generation and its interpretation
- Exposed to scientific writing and technical presentation

RESEARCH ANNEXURE (ANNEXURE I)

[Link to Google Scholar](#)

A. CONFERENCE ATTENDED*

1. Talk titled "Damage evaluation in proton-irradiated SiC_f/SiC with Sc-nitrate and Al₂O₃-Y₂O₃ sintering additives" by **Amit Siddharth Sharma**, P Fitriani, D-H Yoon in **The Korean Ceramic Society Spring Meeting held at Changwon, Republic of Korea** from 11-13 April 2018.
2. Talk titled "Post-sintering heat treatments for the enhancement of toughness in hot pressed SiC_f/SiC composites" by **Amit Siddharth Sharma**, P Fitriani, D-H Yoon in **The Korean Ceramic Society Spring Meeting held at Gunsan, Republic of Korea** from 19-21 April 2017.
3. Talk titled "Fabrication of SiC_f/SiC composites using electrophoretic deposition combined with ultrasonication followed by hot pressing" by D-H Yoon, P Fitriani, S H Chae, K Raju, **Amit Siddharth Sharma**, in **40th International Conference and Exposition on Advanced Ceramics and Composites held at Florida, USA** from 24-29 January 2016.
4. Talk titled "Microstructure-flexural strength correlation of rare earth nitrates-added SiC_f/SiC composites" by **Amit Siddharth Sharma**, P Fitriani, D-H Yoon in **The Korean Ceramic Society Fall Meeting held at Incheon, Republic of Korea** from 4-6 November 2015.
5. Talk titled "Microstructure-wear resistance correlation and wear mechanisms of spark plasma sintered Cu-Pb nanocomposites" by **Amit Siddharth Sharma**, K Biswas and B Basu in **XI International Conference on Nanostructured Materials- NANO 2012 held at Rhodes, Greece** from 26-31 August 2012.
6. Talk titled "Spark plasma sintering and microstructural characteristics of nanostructured Cu-Pb alloys" by **Amit Siddharth Sharma**, K Biswas and B Basu in **NMD ATM, Indian Institute of Metals Conference held at Kolkata, India** from 14-17 November 2009.

*Selected conferences where Oral presentations (self) were delivered.

B. RESEARCH PUBLICATIONS

Invited review paper on metal-ceramic nanocomposites (I.F ~ 31.0)

1. **Amit Siddharth Sharma**, Surekha Yadav, Bikramjit Basu, Krishanu Biswas: High-entropy alloys and metallic nanocomposites: Processing challenges, microstructure development and property enhancement; Materials Science and Engineering-Reports, vol. 131 (2018) pp. 1-42.

Nuclear-irradiation response of ceramic composites

2. Pipit Fitriani, **Amit Siddharth Sharma**, Dang-Hyok Yoon: Effects of sintering additives on the microstructural and mechanical properties of the ion-irradiated SiC_f/SiC; Journal of Nuclear Materials, vol. 503 (2018) pp. 226-234.

3. **Amit Siddharth Sharma**, Pipit Fitriani, Bong-Ki Min, Dang-Hyok Yoon: Comparison of the proton irradiation-induced damage in SiC_f/SiC containing different sintering additives; Journal of the European Ceramic Society, vol. 38 (2018) pp. 2823-2831.

Bonded ceramic assemblies

4. **Amit Siddharth Sharma**, Pipit Fitriani, Dang-Hyok Yoon: Fabrication of SiC_f/SiC and integrated assemblies for nuclear reactor applications; Ceramics International, vol. 43 (2017) pp. 17211-17215.

5. Arifin Septiadi, Pipit Fitriani, **Amit Siddharth Sharma**, Dang-Hyok Yoon: Low pressure joining of SiC_f/SiC composites using Ti₃AlC₂ or Ti₃SiC₂ MAX phase tape; Journal of the Korean Ceramic Society, vol. 54 (2017) pp. 340-348.

6. Pipit Fitriani, **Amit Siddharth Sharma**, Arifin Septiadi, Ji-Yeon Park, Dang-Hyok Yoon: Fabrication of tubular SiC_f/SiC using different preform architectures by electrophoretic deposition and hot pressing; Ceramics International, vol. 43 (2017) pp. 7618-7626.

Processing-microstructure-property correlation of advanced ceramic composites

7. Wahid Muhammad, **Amit Siddharth Sharma**, Dang-Hyok Yoon: Fabrication and mechanical properties of ZrB₂ strengthened SiC_f/SiC composites prepared by hybrid processing route; Ceramics International, vol. 45 (2019) pp. 3648-3656.

8. Pipit Fitriani, Dang-Hyok Yoon, **Amit Siddharth Sharma**: Effects of post-sintering annealing on the microstructure and toughness of hot-pressed SiC_f/SiC composites with Al₂O₃-Y₂O₃ additions; Ceramics International, vol. 43 (2017) pp. 13330-13338.

9. Pipit Fitriani, Arifin Septiadi, Dang-Hyok Yoon, **Amit Siddharth Sharma**: Fabrication of tough SiC_f/SiC composites by electrophoretic deposition using a fabric coated with FeO-catalyzed phenolic resin; Journal of the European Ceramic Society, vol. 37 (2017) pp. 1311-1320.

10. **Amit Siddharth Sharma**, Pipit Fitriani, Dang-Hyok Yoon: Microstructure-fracture behavior correlation of toughened SiC_f/SiC composites prepared by vacuum infiltration and hot pressing; Ceramics International, vol. 42 (2016) pp. 8713-8723.

11. Pipit Fitriani, **Amit Siddharth Sharma**, Dang-Hyok Yoon: Microstructure-flexural strength correlation and efficacy of rare earth nitrates on the sintering of SiC_f/SiC composites; Journal of the European Ceramic Society, vol. 36 (2016) pp. 991-999.

12. Pipit Fitriani, **Amit Siddharth Sharma**, Sungho Lee, Dang-Hyok Yoon: Formation of a carbon interphase layer on SiC fibers using electrophoretic deposition and infiltration methods; Journal of the Korean Ceramic Society, vol. 52 (2015) pp. 284-289.

Wear behavior of metal-ceramic composites

13. **Amit Siddharth Sharma**, Krishanu Biswas, Bikramjit Basu: Microstructure-hardness-fretting wear resistance correlation in ultrafine grained Cu-TiB₂-Pb composites; Wear, vol. 319 (2014) pp. 160-171.

14. **Amit Siddharth Sharma**, Krishanu Biswas, Bikramjit Basu: Microstructure-wear resistance correlation and wear mechanisms of spark plasma sintered Cu-Pb nanocomposites; Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science, vol. 45A (2014) pp. 482-500.

15. **Amit Siddharth Sharma**, N Mishra, Krishanu Biswas, B Basu: Fretting wear study of Cu-10 wt. % TiB₂ and Cu-10 wt. % TiB₂-10 wt% Pb composites; Wear, vol. 306 (2013) pp. 138-148.

16. **Amit Siddharth Sharma**, Krishanu Biswas, Bikramjit Basu: Fine scale characterization of surface/subsurface and nanosized debris particles on worn Cu-10 % Pb nanocomposites; Journal of Nanoparticle Research, vol. 15 (2013) pp. 1-12.

Spark plasma sintering of metal-ceramic composites

17. **Amit Siddharth Sharma**, Nisha Mishra, Krishanu Biswas, Bikramjit Basu: Densification kinetics, phase assemblage and hardness of spark plasma sintered Cu-10 wt. % TiB₂ and Cu-10 wt. % TiB₂-10 wt. % Pb composites; Journal of Materials Research, vol. 28 (2013) pp. 1517-1528.

18. Krishanu Biswas, **Amit Siddharth Sharma**, Bikramjit Basu: On the sintering mechanisms and properties of Cu-Pb and Cu-Pb-TiB₂ nanocomposites densified using spark plasma sintering; Scripta Materialia, vol. 69 (2013) pp. 122-126.

19. **Amit Siddharth Sharma**, Krishanu Biswas, Bikramjit Basu, Dibyendu Chakravarty: Spark plasma sintering of nanocrystalline Cu and Cu-10 wt. % Pb alloy; Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science, vol. 42A (2011) pp. 2072-2084.

Processing and wear behavior of polymer composites

20. Ankush Kothalkar, **Amit Siddharth Sharma**, Krishanu Biswas, Bikramjit Basu: Novel HDPE-quasicrystal composite fabricated for wear resistance; Philosophical Magazine, vol. 91 (2011) pp. 2944-2953.

21. Ankush Kothalkar, **Amit Siddharth Sharma**, Garima Tripathi, Bikramjit Basu, Krishanu Biswas: HDPE-quasicrystal composite: Fabrication and wear resistance; Transactions of Indian Institute of Metals, vol. 65(1) (2012) pp. 13-20.

Automotive steels

22. Basudev Bhattacharya, **Amit Siddharth Sharma**, Sujoy S Hazra, Ranjit Kumar Ray: A study of microstructures and tensile properties of two Fe-Mn-Al-Si-C alloys; Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science, vol. 40A (2009) pp. 1190-1202.

C. TEACHING ASSISTANTSHIP

- **Teaching during post-doctoral:** "Solidification processing" at Department of Materials Science and Engineering, Yeungnam University for 2017-2018_II semester

- **Teaching after PhD** at NIT Raipur#:

UG-7th semester course "Phase transformation and phase equilibria" for 2014-2015_I session

UG-3rd semester course "Metallurgical thermodynamics" for 2014-2015_I session

UG-4th semester course "Transport phenomena in metallurgical processes" for 2014-2015_II session

UG-6th semester course "Materials modelling and simulation" for 2014-2015_II session

- **Tutored an institute level course during PhD:** Introduction to manufacturing processes (TA 201) for one semester at IIT Kanpur

#Batch of 90 students for each course.

References available on request.

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