

DR. SUMIT CHAKRABORTY

Assistant Professor, Centre for Interdisciplinary
Sciences, JISIAR

AFHEA-UK

Ph. D. (IIT Kharagpur)

Post-Doc (Hanyang University, Korea)

Marie-Curie Fellow (University of Sheffield)

Email: sumit@jisiasr.org;

chakrabortysumitiitkgp@gmail.com;

sumit.chakraborty@sheffield.ac.uk;

<https://scholar.google.com/citations?user=4soCuH0AAAAJ>

https://www.researchgate.net/profile/Sumit_Chakraborty5

ORCID: <https://orcid.org/0000-0002-1387-0385>

[Scopus Author ID: 56571965600](https://scopus.com/authid/detail.url?authorID=56571965600)

PROFESSIONAL EXPERIENCES

No.	Designation	Institute/Organisation	Date from - Date to
1	Assistant Professor	JISIAR, KOLKATA	20/01/2022 – Present
2	Marie-Curie fellow (by European Commission)	The University of Sheffield, The UK	01/12/2019 – 14/12/2021
3	SERB-DST Young Scientist	IEST Shibpur, WB, India	01/07/2016 – 10/09/2019
4	Post-Doc (BK21+)	Hanyang University, Seoul, South Korea	01/01/2014 - 31/05/2016
5	Assistant Professor	Lovely Professional University, Punjab, India	22/07/2013 - 30/11/2013

RESEARCH FOCUS

Our prime research vision is to develop sustainable mineral and textiles composite materials utilizing natural and industrial wastes and CO₂ sequestration, followed by exploring their underlying chemistry.

Outline of our research

(i) Chemistry of natural and textiles fibre and their surface modification using aqueous polymer

(ii) Explore the chemistry behind hydration and hardening mechanism of the mineral and cementitious materials along with cracking and spalling behaviour and their mitigation measures utilizing natural fibres, waste minerals, natural additives, and bio-chemical healing agents.

(iii) Minimise the CO₂ emission using wastes minerals and CO₂ sequestration by mineralization

(iv) Explore the fundamental chemistry of the cement, alkali activated/geopolymer cement and mineral materials

- Hydration reaction/kinetics modelling (analytical) and thermodynamic modelling,
- Quantification (molarity) of the hydrated product with reaction time,

- Correlation of colloidal medium density at early age the capillary region at harden state,
- pH of the medium at the hardening state and correlation with pore structures

(v) Interfacial interaction and Co-relation between engineering properties and the microstructural characteristics at the molecular level

- Identification of correct ITZ and micro/nanoscale modelling by XRD, XRF, SEM-EDS, TG-DSC, FTIR, NMR, etc.
- Quantification and simulation of porosity and pore structure with reaction time MIP and data processing of X-ray CT technique
- Co-relate the strength and the hydration products nucleation and crystallization, modelling and simulation (using code aster software)

Some very interesting research projects were executed and are ongoing

1. Project: FRGeo-Crete (838623)

A research project awarded by European Commission (worth Euro 224000.00) has been executed on the evaluation of mechanisms behind the fibre-matrix interaction and fibre stability in controlling the cracking and spalling of geopolymer composites and develop a novel, sustainable, cracking controlled material using surface modified natural fibres using aqueous based polymers.

Technical Achievements:

- Elucidate the natural fibres surface modification (using aqueous based polymer) mechanism and chemistry of the fibre- matrix interaction.
- Determination of nano-scale structure of alkali activated geopolymer materials and co-relate with its properties using advanced characterization techniques, e.g., XRD, FTIR, SEM, XRF, TG-DSC, MAS-NMR, and X-ray CT, etc.

Achievement beyond Academia:

- Utilization of mineral wastes in the value added products by activation and geopolymerization and their sustainable disposal and management.
- Evaluate Low carbon emission strategies and CO₂ sequestration.
- Developed interests of the policymakers and industries for utilizing this new material

2. Project: H₂-rich water as an accelerated admixture (YSS/2015/001393)

A research project was executed (worth Rs. 2644715.00/€30000 from SERB, India) on the utilisation of hydrogen-rich water as a green and sustainable admixture to accelerate the cement hydration reaction kinetics, thus reducing construction time and delays.

Technical Achievements:

- Elucidated a unique technique to speed-up the cement setting and assessed the physical, mechanical, and hydration kinetics of cement in the presence of hydrogen-rich water.
- Explored the mechanism behind the cement hydration acceleration action of H₂-rich water by monitoring the structural and microstructural characteristics using FTIR, XRD, SEM-EDS.
- Estimated that the use of 0.5 ppm of H₂-rich water sets the cement very early (final set within 14 ± 3 min) and can save 117.18 USD or 98.85 €/m³ concrete production as compared to that of the existing set accelerator utilisation.

Achievement beyond academia

- Develop interests of construction industries, engineers, contractors on the new materials
- Develop scope for bigger funding to implement this technology

- Increase awareness of the public to avoid the use of chemical admixture

3. Research: CO₂ sequestrated alternative cementitious materials

An interesting research was conducted on the production of Nano and geomaterial based alternative cementitious material by the hydrothermal method, alkali activation of the waste minerals and CO₂ sequestration by aqueous mineralisation.

Technical achievements:

- Elucidated the effectiveness of the hydrothermal method in producing alternative cementitious material using silica fume and hydrated alumina as geopolymer precursor.
- Developed a novel strategy for the production of the carbon dioxide sequestration based cementitious construction material using aqueous carbonated lime.
- Explored an effective technique to dispose of the sewage and industrial wastes in a sustainable way by developing value-added construction material.
- Evaluated the physical, mechanical, structural, and microstructural characteristics of the alkali activated geopolymer based cementitious materials using several analytical tools.

Achievement beyond academia:

- Assessed the impact of these techniques on society in terms of the reduction of energy consumption (~40%), CO₂ emission (4320 kg/annum), waste deposition (5.4 million t), and environmental pollution.

PUBLICATIONS RECORD (H-index: 16, i10- index: 23 as on 01/2022)

Patents:

1. **Patent Granted** "Chemically modified jute fiber reinforced high strength concrete and process thereof", Inventors: **Chakraborty Sumit**, Kundu Sarada Prasad, Roy Aparna, Basak Ratan Kumar, Sen Rituparna, Basu Majumder Subhasish, Adhikari Basudam. Indian patent file No. 425/KOL/2011, Application Filing Date: 2011/03/30, **Patent Number:** 381157 Date: 02/11/2021.
2. Patent filed on "Casting of concrete pipe reinforced with chemically modified jute fiber and method of casting of such fiber reinforced concrete pipe", Inventors: Kundu Sarada Prasad, Roy Aparna, **Chakraborty Sumit**, Basak Ratan Kumar, Sen Rituparna, Basu Majumder Subhasish, Adhikari Basudam. Indian patent file No. 426/KOL/2011, Application Filing Date: 2011/03/30, Publication Number: NA, Publication Date: 2016/09/02.
3. Patent filed on "Process for chemically modified jute fibre reinforced high performance cement sheet", Inventors: Adhikari Basudam, Majumder S.B., **Chakraborty Sumit**, Kundu Sarada Prasad. Indian patent file No. 68/KOL/2013, Application Filing Date: 2013/01/18, Publication Number: 31/2016, Publication Date: 2016/07/29, Field of Invention: (FI03) CHEMICAL, Classification (IPC): C04B-28/00.

Journal publications:

1. **Editorial:** Signorini C, Sola A, **Chakraborty S**, Volpini V. New. Frontiers in Cementitious and Lime-Based Materials and Composites. Crystals 2022, 12, 61.
2. Mandal R, Panda SK, **Chakraborty S**. Effect of electrolyzed water (EW) in accelerating the cement setting and hydration as demonstrated by the analytical techniques, Construction and Building Materials, 311 (2021) 125367: 1-10.
<https://doi.org/10.1016/j.conbuildmat.2021.125367>
3. **Chakraborty S**, Mandal R, Chakraborty S, Guadagnini M, Pilakoutas K. (2021) Chemical attack and corrosion resistance of concrete prepared with electrolyzed water. Materials Research and Technology, 11, 1193-1205. ISSN: 2238-7854, IF: 5.039

4. Mandal R, **Chakraborty S**, Chakraborty S. (2020) Concrete prepared using electrolyzed water revealed benefits in controlling the early age properties. *Journal of Materials in Civil Engineering*, 2021, 33(6): 04021130. ISSN: 0899-1561. IF: 2.169
5. **Chakraborty S**, Mandal R., Chattopadhyay S., Chakraborty S. (2019). Investigation on the effectiveness of electrolyzed water in controlling the early age properties of cement mortar. **Construction and Building Materials**, 211, 1–11. IF. 6.141
6. Mandal R., **Chakraborty S.**, Chakraborty P., Chakraborty S. (2019). Development of the electrolyzed water based set accelerated greener cement paste, **Materials Letters**, 243, 46-49. ISSN: 0167-577X, IF 3.423.
7. Jo B. W., **Chakraborty S.**, Lee S. T., and Lee Y. S. (2018). Durability Study of Silica Fume-mortar exposed to the Combined Sulfate and Chloride-rich Solution, **KSCE Journal of Civil Engineering**, 23(1), 356-366. IF 1.805.
8. Kundu S.P., **Chakraborty S.**, Chakraborty S. (2018). Effectiveness of the surface modified jute fibre as fibre reinforcement in controlling the physical and mechanical properties of concrete paver blocks, **Construction and Building Materials**, 191, 554-563. IF 6.141.
9. Kundu S.P., **Chakraborty S.**, Majumder S.B., Adhikari B. (2018). Effectiveness of the mild alkali and dilute polymer modification in controlling the durability of jute fibre in alkaline cement medium. **Construction and Building Materials**, 147, 330-342. IF: 6.141.
10. **Chakraborty S.**, Jo B.W., Jo J.H., Baloch Z. (2017). Effectiveness of sewage sludge ash combined with waste pozzolanic minerals in developing sustainable construction material: an alternative approach for waste management. **Journal of Cleaner Production**, 153, 253-263. ISSN: 0959-6526, IF – 9.297.
11. Jo B.W., Sikandar M.A., **Chakraborty S.**, and Baloch Z. (2017). Strength and durability assessment of Portland cement mortars formulated from hydrogen-rich water. **Advances in Materials Science and Engineering**, 2017 (2526130), 1-10. ISSN: 1687-8434. IF - 1.37.
12. Jo B.W., Sikandar M.A., **Chakraborty S.**, Baloch Z. (2017). Investigation of the acid and sulfate resistance performances of hydrogen-rich water based mortars. **Construction and Building Materials**, 137, 1–11. ISSN: 0950-0618, IF – 6.141.
13. Jo B.W., **Chakraborty S.**, Jo J.H. (2017). Effectiveness of a hydrothermally produced alternative cementitious material on the physical and mechanical performance of concrete. **Journal of Cleaner Production**, 142, 3269 - 3280. ISSN: 0959-6526, IF – 9.297.
14. Jo B.W., **Chakraborty S.**, Sikandar M.A., Lee Y.S. (2018). Prediction of the failure stress of hydrogen-rich water based cement mortar using the Weibull distribution model. **KSCE Journal of Civil Engineering**, 22(5), 1827-1839. DOI 10.1007/s12205-017-1560-3. ISSN: 1976-3808, IF – 1.805.
15. Jo B.W., Sikandar M.A., **Chakraborty S.** and Baloch Z. (2017). Investigation of corrosion assessment of hydrogen-rich water based cement mortars. **Journal of Ceramic Processing Research**, 18 (4), 305-312. ISSN: 1229-9162. IF - 0.32.
16. **Chakraborty S.**, Jo B.W., and Sikandar M.A. (2016). Hydration Mechanism of the Hydrogen-rich Water Based Cement Paste. **The Journal of Physical Chemistry C**, 120 (15), 8198-8209. ISSN: 1932-7447, IF- 4.48.
17. Jo B.W., **Chakraborty S.** (2015). A mild alkali treated jute fibre controlling the hydration behaviour of greener cement paste. **Scientific Reports, Nature**, 5 (7837),1-9. ISSN: 2045-2322, IF - 4.12.

18. Jo B.W., **Chakraborty S.**, Choi J.S., and Jo J.H. (2016). Investigation on the Effectiveness of Aqueous Carbonated Lime in Producing an Alternative Cementitious Material. **International Journal of Concrete Structures and Materials**, 10(1), 15–28. ISSN: 2234-1315, IF - 2.36.
19. Jo B.W., **Chakraborty S.**, Sikandar M.A., Kim H., Kim K.H. (2015). Hydrogen-rich water revealed benefits in controlling the physical and mechanical performances of cement mortar. **Construction and Building Materials**, 100, 31–39. ISSN: 0950-0618, IF -3.48.
20. Jo B.W., **Chakraborty S.**, Lee Y.S. (2015). Hydration study of the polymer modified jute fibre reinforced cement paste using analytical techniques. **Construction and Building Materials**, 101, 166–173. ISSN: 0950-0618, IF -6.141.
21. Jo B.W., **Chakraborty S.**, Jo J.H., Lee Y.S. (2015). Effectiveness of carbonated lime as a raw material in producing a CO₂-stored cementitious material by the hydrothermal method. **Construction and Building Materials**, 95, 556–565. ISSN: 0950-0618, IF -3.48.
22. Jo B.W., **Chakraborty S.**, Kim H. (2015). Prediction of the curing time to achieve maturity of the nano cement based concrete using the Weibull distribution model. **Construction and Building Materials**, 84, 307–314. ISSN: 0950-0618, IF -6.141.
23. Jo B.W., **Chakraborty S.**, Kim H. (2015) Prediction of the curing time to achieve maturity of the nano cement based concrete using the Weibull distribution model: A complementary data set. **Data In Brief**, 4, 285-291. ISSN: 2352-3409, IF - 0.00
24. Jo B.W., **Chakraborty S.**, Kim H. (2016). Efficacy of alkali-treated jute as fibre reinforcement in enhancing the mechanical properties of cement mortar. **Materials and Structures**, 31(3), 1093-1104. ISSN: 1359-5997, IF - 2.271.
25. Kundu S.P., **Chakraborty S.**, Adhikari B., and Majumder S.B. (2014). Concrete reinforced with chemically modified jute: Fabrication and testing of pre-stressed concrete poles and railway sleepers in India. *Concrete Plant International*, 6, 86-90 (English). Available at: <https://www.cpi-worldwide.com/reprints/article/37607?lan=en>.
26. Jo B.W., **Chakraborty S.**, Yoon K.W. (2014). Synthesis of a cementitious material (nano cement) using bottom up nanotechnology concept: an alternative approach to avoid CO₂ emission during production of cement. **Journal of Nanomaterials**, 2014 (409380), 1-12. ISSN: 1687-4110, IF - 2.207.
27. Jo B.W., **Chakraborty S.**, Kim K.H. (2014). Investigation on the effectiveness of chemically synthesized nano cement in controlling the physical and mechanical performances of concrete. **Construction and Building Materials**, 70, 1-8. ISSN: 0950-0618, IF -6.141.
28. Jo B.W., **Chakraborty S.**, Yoon K.W. (2014). A hypothetical model based on effectiveness of combined alkali and polymer latex modified jute fibre in controlling the setting and hydration behavior of cement. **Construction and Building Materials**, 68, 1–9. ISSN: 0950-0618, IF -6.141.
29. Jo B.W., **Chakraborty S.**, Kim K.H., Lee Y.S. (2014). Effectiveness of the top-down nanotechnology in the production of ultrafine cement (~220 nm), **Journal of Nanomaterials**, 2014 (131627), 1-9. ISSN: 1687-4110, IF -2.207.
30. **Chakraborty S.**, Kundu S.P., Roy A., Basak R.K., Basu Majumder S., Adhikari B. (2013). Improvement of the mechanical properties of jute fibre reinforced cement mortar: A statistical approach. **Construction and Building Materials**, 38, 776-784. ISSN: 0950-0618, IF - 6.141.
31. **Chakraborty S.**, Kundu S.P., Roy A., Adhikari B., Majumder S.B. (2013). Effect of jute as fiber reinforcement controlling the hydration characteristics of cement matrix. **Industrial Engineering and Chemistry Research**, 52, 1252-1260. ISSN: 0888-5885, IF – 3.573.

32. **Chakraborty S.**, Kundu S.P., Roy A., Adhikari B. Majumder S.B. (2013). Polymer modified jute fibre as reinforcing agent controlling the physical and mechanical characteristics of cement mortar. **Construction and Building Materials**, 49, 214-222. ISSN: 0950-0618, IF -6.141.
33. Roy A., **Chakraborty S.**, Kundu S.P., Basak R.K., Basu Majumder S., Adhikari B. (2012). Improvement in mechanical properties of jute fibres through mild alkali treatment as demonstrated by utilization of the Weibull distribution model. **Bioresource Technology**, 107, 222-228. ISSN: 0960-8524, IF – 9.642.
34. Kundu S.P., **Chakraborty S.**, Roy A., Basu Majumder S., Adhikari B. (2012). Chemically modified jute fibre reinforced non-pressure (NP) concrete pipes with improved mechanical properties. **Construction and Building Materials**, 37, 841-850. ISSN: 0950-0618, IF -6.141.
35. Roy A., **Chakraborty S.**, Kundu S.P., Adhikari B., Majumder S.B. (2013). Lignocellulosic Jute Fiber as a Bioadsorbent for the Removal of Azo Dye from Its Aqueous Solution: Batch and Column Studies. *Journal of Applied Polymer Science*, 129(1), 15-27. ISSN: 1097-4628, IF - 1.90.
36. Roy A., **Chakraborty S.**, Kundu S.P., Majumder S. B., Adhikari B. (2013). Surface grafting of Corchorus olitorius fibre: a green approach for the development of activated bioadsorbent. **Carbohydrate Polymers**, 92, 2118-2127. ISSN: 0144-8617, IF – 9.381.

Book

1. **Chakraborty, S.**, Adhikari, B., Basu Majumder, S. *Handbook on the reinforcing behavior of jute fibre in cement mortar*. LAP Labmert Academic Publishing, OmniScriptum GmbH & Co. KG, Germany, 2016. ISBN: 978-3-659-91063-0.

Book Chapters

1. **Chakraborty, S.**, Jo, B.W. (2018). Aqueous based carbon dioxide sequestration. In "Carbon dioxide sequestration in cementitious construction materials", Torgal, F.P., Shi, C., Sanchez, A. Eds., Woodhead Publishing Series in Civil and Structural Engineering, Elsevier, UK, 2018. ISBN: 978-0-08-102444-7 (print) ISBN: 978-0-08-102447-8 (online).
2. **Chakraborty, S.**, Jo, B.W., Yoon, Y.S. (2019). Development of nano cement concrete by top-down and bottom-up nanotechnology concept. In "Smart Nanoconcretes and Cement-Based Materials - Properties, Modelling and Applications", Liew, M. S., Nguyen-Tri, P., Nguyen, T. A., Kakooei, S. Eds., Elsevier, the UK, ISBN: 978-0-12-817854-6.

Seminars & conferences (presenter in bold):

1. **Chakraborty S.**, Guadagnini M., and Pilakoutas K. Development of cement-less construction materials utilizing waste alumino-silicate precursors by hydrothermal method and alkali activation. Workshop on Engineered Materials For Sustainable Structures (EMSS21), organised by The Research Centres EN&TECH and CRICT of the University of Modena and Reggio Emilia, Modena, Italy, 26th - 28th April 2021. **(Invited lecture)**
2. Mandal R., Chattopadhyay S., **Chakraborty S.**, Chakraborty P., Chakraborty S. Development of electrolyzed water based concrete: a new approach for early strength gain. Proceedings of UKIERI Concrete Congress, Concrete: The Global Builder, held on 5 - 8 March 2019, Jalandhar, Punjab, India, pp 80, ISBN: 978-93-5351-262-0 (print). Full length paper Available at: <https://ukiericoncretecongress.com/Home/files/Proceedings/pdf/UCC-2019-193.pdf>. Accessed on 14/03/2019.
3. **Chakraborty S.** Development of Clinker free alternative cementitious material using waste minerals. National Conference on Sustainable Advanced Technologies for Environmental Management. Organized by Depart. of Civil Eng., IEST Shibpur, Howrah, India, On June 28-30, 2017, Excel India Publishers, New Delhi, India, pp 92-93, ISBN:978-93-86256-94-2.

4. **Chakraborty S.** Effectiveness of the hydrogen-rich water in controlling the early age properties of cement mortar. National Conference on Advanced Functional Materials Processing & Manufacturing (NCAFMPM-2017). 2-3 February 2017, CMERI Durgapur, Excel India Publishers, New Delhi, India, pp 11-14. ISBN: 978-93-86256-40-9.
5. Jo B.W., **Chakraborty S.**, Baloch Z., Yoon K.W., Zhang, X. Synthesis of an Alternative Cementitious Material using Pozolanic Material Infused with Hydrated Alumina. KSCE Convention 2014. 23-24 October, 2014. Dague, South Korea, PP, 325-326.
6. Kundu S.P., **Chakraborty S.**, Roy A., Basu Majumder S., Adhikari B. Fabrication of jute fibre reinforced concrete pavers and its characterization. Conference on fibre reinforced concrete global developments, February 2012, ICI, Nagpur, India. pp 111.
7. **Chakraborty S.**, Basu Majumder S., Adhikari B. In-situ polymer modification enhances physico-mechanical and hydration performances of jute fibre reinforced cement composite. International Conference on Advancements in polymeric Materials (APM), 2012, CIPET Ahmedabad, India.
8. **Chakraborty S.**, Basu Majumder S., Adhikari B. Synergistic effect of in-situ polymer latex modification on physico-mechanical and hydration behavior of pre-treated jute fiber reinforced cement composite. International Year of Chemistry (IYC), 2011, IIT Kharagpur.
9. **Chakraborty S.**, Basu Majumder S., Adhikari B. Unmodified and chemically modified jute fiber reinforced cement mortar composites. International Conference on Advances in Materials and Materials Processing (ICAMMP), 2011, IIT Kharagpur, India.
10. **Chakraborty S.**, Kundu S.P., Roy A., Basu Majumder S., Adhikari B. Processing and fabrication of chemically modified jute fiber reinforced cement concrete composite. National seminar on Recent Advances in Chemical Engineering (RACE) 2010, GIET Gunupur, Odisha, India.

Major research project document prepared/Technical report:

- Final project report on "Development of jute fiber reinforced cement concrete composites". Project no: JMDC/JTM/MM-IV/7.1/2008, Dated: 31.3.2008. Sponsored by National Jute Board, Ministry of Textile, Govt. of India, 3A, Park Plaza, 71, Park Street, Kolkata-700016. Project Team: Prof Basudam Adhikari (PI), Prof Subhasish Basu Majumder (Co-PI), Mr. Rituparna Sen (Co-PI), Dr Ratan Kumar Basak (Consultant), Sarada Prasad Kundu (Project scholar), Sumit Chakraborty (Project scholar), Aparna Roy (Project scholar). The document available at http://www.jute.com/documents/10437/0/JFR_FINAL_PROJECT_REPORT.pdf/971388b6-640a-44db-8465-bea71f9244a4.

FUNDING/GRANT AWARDED

- 2019 Marie Skłodowska-Curie Individual Fellowship by H2020 program of European Commission on the proposal FRGeo-Crete (838623), Total Grant amount: €224933.76.
- 2016 Principal Investigator SERB-DST Young Scientist Scheme grant, Govt. of India. Project "Development of green and sustainable cement composites utilizing Hydrogen-rich water: A green approach to speed up the construction process". Amount **Rs. 2644715.0**, €34,600.0 (June 2016).

HONORS & AWARDS

- 2021 **Recognised AFHEA-UK:** Associate Fellow of Higher Education Academy, UK (Ref. PR234385)
- 2019 **MARIE SKŁODOWSKA-CURIE INDIVIDUAL FELLOWSHIP**, FRGeo-Crete (838623).
- 2018 **SEAL OF EXCELLENCE Award** by the European Commission, 800266, FRGeo-Crete.
- 2016 **SERB-DST Young Scientist**, Ministry of Human Resource Development, Govt. of India

2016	Outstanding Reviewer Award delivered by Construction and Building Materials, Elsevier
2014	BK21+ Post Doc Fellowship , National Research Foundation, Republic of Korea
2010	Senior Research Fellowship , Ministry of Textiles, Govt. of India
2008	Junior research Fellowship , Ministry of Textiles, Govt. of India

ACADEMIC SUPERVISION

Type of thesis/ Dissertation	Name of Candidate	Thesis title	Year of passing
PG (M.Thech.)	Romio Mondal	Investigation on the effectiveness of electrolyzed water on the properties of cement composites	2019

PROFESSIONAL SERVICES

Service	Name of the organisation
Editor	(Guest)Crystals (ISSN 2073-4352; CODEN: CRY5BC) Impact factor 2.404
Reviewer	e.g. Construction and Building Materials, Journal of cleaner productions, Cement and Concrete Composites, Materials Letters, Materials and Design, ACS-Applied Materials and Interfaces, Journal of Building Engineering, Journal of Materials research and technology, and ASCE-Journal of Materials for Civil Engineering, etc.
Thesis Examiner	I have been a member of Doctoral committees of four (04) Ph D dissertations in the Department of Civil and Environmental Engineering, Hanyang University, Seoul, Republic of Korea.
Thesis mentor	Ph.D. thesis Mentor (01), The University of Sheffield

TRAINING:

Sl. No	Name of Training/Seminar/Workshop (Number count)	Hosted by
1	Departmental Research Seminar/Webinar (16)	CSE University of Sheffield (UoS)
2	Concrete and Earthquake Engineering Seminar (53)	CEE group UoS
3	Post-Doc Forum (10)	CSE UoS
4	Structural Lab Induction	CSE UoS
5	X-ray Lab induction	Mat. Sci. Eng. UoS
6	Sorby Centre lab induction	Mat. Sci. Eng. UoS
7	Public Engagement Master Class-Getting Started	Think Ahead program UoS 29/01/2020
8	TAM air online training coarse (cement testing)	TAM Air 2/6/20
9	Two part seminar: Communicating your research beyond academia (02)	Think Ahead program, UoS 3/6/20 and 17/06/20
10	Solution Calorimetry training course	TAM Air 16/06/20
11	Civil PGR conference	CSE, UoS 01/0720- 02/07/20
12	Young PI feedback event	Think Ahead program, UoS 16/07/20
13	Think Ahead Induction workshop	Think Ahead program, UoS 11/08/2020
14	Personal Pathway explorer Event	STA, Elevate, UoS 14/08/20
15	13 Fib online Ph.D Symposium	Fib International Org 26/08/20

Sl. No	Name of Training/Seminar/Workshop (Number count)	Hosted by
16	Foundation pathway orientation workshop	STA, Elevate, UoS 26/08/20
17	GTA induction application – Further information	STA, Elevate, UoS 14/09/2020
18	STA Assessment & Feedback	STA, Elevate, UoS 21/09/2020
19	National Post-doc appreciation week	Researchers from UK 21/09/20
20	STA Induction to teaching as aGTA	STA, Elevate, UoS 28/09/20
21	STA Teaching, Design and Delivery	STA, Elevate, UoS 29/09/2020
22	STA Lecturing	STA, Elevate, UoS 5/10/20
23	STA Laboratory Demonstration	STA, Elevate, UoS 14/10/20
24	PGR Supervision at Sheffield	Supervisionaries, UoS 14/10/20
25	STA Research Supervision	STA, Elevate, UoS 20/10/20
26	Supervisionaries: Facilitating Progress and Supporting Stuck Thesis Writers	Supervisionaries, UoS 4/11/20
27	Grant Writing workshop	Supervisionaries, UoS 27/11/20
28	Supervisionaries: Having Effective Careers conversation with your PGR	Supervisionaries, UoS
29	Supervisionaries: Your research career, What next	Supervisionaries, UoS 09/12/20
30	Faculty academic Welcome – Introductory event	UoS 14/12/20
31	Associate Supervisionaries information session	Supervisionaries, UoS 16/12/20