

Eligibility & Regulations:

1. <http://research.vtu.ac.in/>,
2. <https://vtu.ac.in/en/ph-d/#>
3. <https://vtu.ac.in/en/msc/>
4. <https://vtu.ac.in/en/ph-d-syllabus/>

Research Supervisor:

Name	Designation	Specialization
Dr. Syed Abu Sayeed Mohammed	Professor and Head, Dept. of Civil Engineering	<ol style="list-style-type: none">1. Environmental Engineering, Waste water treatment, solid waste management2. Geotechnical and geo-environmental Engineering3. Modeling of Environmental systems4. Nano based materials for Engineering applications5. Microbial induced calcite precipitation (MICP) for geotechnical applications6. Enzyme Induced calcite precipitation (EICP) for geotechnical applications

Patents filed:

An Indian Patent Application No. 2765/CHE/2015, CBR No. 10983, Title “Nano Calcium Silicate – soil based mineral amendments as liners for hazardous waste containment facilities” dated 02/06/2015, patent published on 15/12/2017, and expediated on 15/06/2019.

Publications:

1. Moghal A.A.B, Mohammed S.A.S. A. Almajed and M.A.A. Shamrani(April 2020)” Desorption of heavy metals from lime stabilized semi-arid soils using different extractants”, International Journal Civil Engineering 18,449-461. DOI (<https://doi.org/10.1007/s40999-019-00453-y>) (**Science citation indexed**)
2. **Mohammed, S.A.S.**, Moghal, A.A.B. and Shamrani, M.A.A. (Jan 2019). “State of the art review on strontium toxicokinetics, mechanistic response, alterations

- and regulations”, Int J of Geomate issue 53. DOI: <https://doi.org/10.21660/2019.53.71462> (Review paper)
3. Arif Ali Baig Moghal, Ali Abdul Kareem Obaid, Mosleh Ali Al-Shamrani, Waleed M Zaheed, Talal O Al – Refeai, **Syed Abu Sayeed Mohammed,(2017)**, Physico – Chemical and geo environmental characterization of semi arid soils, International journal of Geomate 12(29),2186-2990. (Scopus Indexed)
 4. Moghal, A.A.B., Reddy, K.R., **Mohammed, S.A.S.**, Shamrani, M.A.A., and Zahid, W.M. (2017). “Retention studies on arsenic from aqueous solutions by lime treated semi-arid soils,” Intl. J. Geomate., 12(29), 2836-2843.(Scopus Indexed)
 5. Arif Ali Baig Moghal, Krishna R Reddy, **Syed Abu Sayeed Mohammed**, Mosleh Ali Al Shamrani, and Waleed M Zahid,(2017), Sorptive response of chromium and mercury from aqueous solutions using chemically modified soils, ASTM Journal of Testing and Evaluation Vol 45, No. 1, Jan 2017, DOI:10.1520/JTE20160066. **(Science citation indexed)**
 6. **Mohammed, S.A.S.** and Moghal, A.A.B. (2016). “Efficacy of Nano Calcium Silicate (NCS) Treatment on Tropical Soils in Encapsulating Heavy Metal Ions: Leaching Studies Validation”. J. Innovative Infrastructure Solutions.1(21), 1-12. (Springer -Scopus Indexed))
 7. **Syed Abu Sayeed Mohammed**, Sanaula, P. F and Arif Ali Baig Moghal, (2016) Sustainable use of locally available red earth and black cotton soils to retain Cd²⁺ and Ni²⁺ from aqueous solutions, International Journal Civil Engineering DOI 10.1007/s40999-016-0052-z. **(Science citation indexed) (Technical note)**
 8. Moghal A.A.B, Reddy, K.R., **Mohammed, S.A.S.**, Al-Shamrani, M.A., and Zahid, W.M., (2016), “Lime amended semi arid soils in retaining copper, lead and Zinc from aqueous solutions,” Water, Air Soil Pollution Vol 227. DOI 10.1007/s11270-016-3054-1. **(Science citation indexed)**
 9. Syed Abu Sayeed Mohammed, Shankara, Maya Naik, Sivapullaiah PV, “Sorption of iron and copper on sand bentonite flyash mixtures” International Journal of research in chemistry and environment, Vol. 4 Issue 2 ,April 2014 pp 1 - 8.
 10. Syed Abu Sayeed Mohammed, Potential of surface complexation and redox modeling for chromium(VI) adsorption on local materials as liners for waste containment facilities. Turkish Journal of Engineering and Environmental Sciences, Vol. 37 Issue 1 March 2013 pp 100 - 108. DOI 10.3906/muh-1112-6

11. Syed Abu Sayeed Mohammed, Application of surface complexation modeling for zinc adsorption on local materials as liners for waste containment facilities. *Journal of materials and environmental science*, Oujda, Morocco Issue 6, September 2012.
12. Syed Abu Sayeed Mohammed, Retention capacity of soils and amended soils for heavy metal ions, *Journal of Physical Chemistry News*, El- Jadida, Morocco, October 2012
13. Syed Abu Sayeed Mohammed, Maya Naik, A review and evaluation of selected kinetic models and sorption processes in amended soils: *International Journal of research in Chemistry and environment*, India, Vol. 1, issue 2, October 2011
14. Syed Abu Sayeed Mohammed, Maya Naik, Utilization of Red soils and amended soils as a liner material for attenuation of copper from aqueous solution: Isotherm and Kinetic Studies. *Journal of Environmental Science and Technology*, 2011, pp 504 – 519. DOI 10.3923/jest.2011.504.519
15. Syed Abu Sayeed Mohammed, Maya Naik, Potential Use of Black Cotton Soil with additives as a Liner material to retain Zinc: Isotherm and Kinetic Studies. *International Journal of Ecology and Development*, India, Volume 19, Number S11, summer 2011, pp 15 – 29.
16. Syed Abu Sayeed Mohammed., Maya Naik., Adsorption Characteristics of Metals in Aqueous Solution by Local Materials with Additives as Liners for Waste Containment Facilities, *Journal of Water and Environment Technology*., Japan, 8(1), 2010, pp 29 – 50. doi:10.2965/jwet.2010.29
17. Syed Abu Sayeed Mohammed, MayaNaik. Syed Tanveeruddin , Influence of additives on the retention of metal ions in a soil of Bangalore, India. *Ambiente& Agua – An Interdisciplinary Journal of Applied Science*., Brazil, 4 (1), 2009, pp 20 - 36. (doi:10.4136/ambi-agua.71)
18. Syed Abu Sayeed Mohammed, MayaNaik. Sanaulla P.F, ZulfiqarAhmed M.N, Studies on contaminant transport, at an Industrial waste dumpsite of Bangalore, India'. *Ambiente& Agua – An Interdisciplinary Journal of Applied Science*., Brazil, 3 (3), 2008, pp 55 – 66. (doi:10.4136/ambi-agua.61)

ASCE Geotechnical special publications (Acceptance Ratio < 30%) (2015-20)

19. Strength Characteristics of Nano Calcium Silicate, Fly Ash and Lime Blended Tropical Soils, Syed Abu Sayeed Mohammed, Arif Ali BaigMoghal and Abdul Lateef,IFCEE2018, Geotechnical special publication no. 296, 105 – 114.
20. Cadmium fixation studies on contaminated soils using nanocalcium silicate – treatment strategy, Syed Abu Sayeed Mohammed, Arif Ali BaigMoghal, Sanaula P.F, KotreshaK,and Hari Prasasd Reddy, Geofrontier 2017 Geotechnical special publication no. 276, 434 – 442.
21. Evaluation of Diffusion Rate Constants from Soil Column Studies In Lime Treated Semi Arid Soils - Pb²⁺ and Zn²⁺ Scenario Arif Ali BaigMoghal ,Krishna R Reddy, **Syed Abu Sayeed Mohammed**, Mosleh Ali Al-Shamrani , Waleed M Zahid and BhaskarChittoori GEOCHICAGO 2016 Geotechnical special publication no. 273, 135 – 144.
22. Potential of soils amended with nano calcium silicate mixture for lead encapsulation in an aqueous medium **Syed Abu Sayeed Mohammed**,Sanaula.P.F, Munwar B Basha and Arif Ali BaigMoghal GEOCHICAGO 2016 Geotechnical special publication no. 273, 467 – 476.
23. Efficacy of lime treatment on the mercury retention characteristics of semi arid soils, Arif Ali BaigMoghal, Krishna R Reddy, **Syed Abu Sayeed Mohammed**, Mosleh Ali Al-Shamrani and Waleed M Zahid, GEOCHINA 2016,Geotechnical special publication No. 261, 41- 48.
24. Role of different leaching methods to arrest transport of Ni²⁺ in soil and soil amended with nano calcium silicate, **Syed Abu Sayeed Mohammed**, Sanaula.P.F, Krishna R Reddy and Arif Ali BaigMoghal GEOCHINA 2016, ,Geotechnical special publication No. 261, 49- 56.
25. Syed Abu Sayeed Mohammed, Arif Ali BaigMoghal, “Soils Amended with Admixtures as Stabilizing Agent to Retain Heavy Metals”, ASCE’s Geotechnical Special Publication 234 series, Feb 2014, pp 2216-2226. Permalink: <http://dx.doi.org/10.1061/9780784413272.216>
26. Arif Ali BaigMoghal, Syed Abu Sayeed Mohammed, B. MunawarBasha, Mosleh Ali Al-Shamrani, “Surface Complexation Modeling for Stabilization of an Industrial Sludge by Alternate Materials”, ASCE’s Geotechnical Special Publication 234 series, Feb 2014, pp 2235-2244.Permalink: <http://dx.doi.org/10.1061/9780784413272.218>
27. Arif Ali BaigMoghal and Syed Abu Sayeed Mohammed “Performance of Soils and Soil Lime Mixtures as Liners to Retain Heavy Metal Ions in Aqueous Solutions”,Geo-

Shanghai, 2014, ASCE's Geotechnical Special Publication 241 series, May 2014, pp 160-169. (doi: 10.1061/9780784413432.017)

Book Chapters:

1. **Nano Materials for soil remediation**” Edited by Dr. Tuan Anh Nguyen, Institute for Tropical Technology, Vietnam Academy of Science and Technology, Hanoi, Vietnam, (Publication date August 2020) our contribution is chapter No 25 titled “Nanomaterials-Based Solidification/Stabilization of metal-contaminated soils *Contributor name:* -Prof. Abu Sayeed Mohammed. ISBN No. 978-0-12-822891-3.
2. Published a technical monograph titled “**Retention of copper and chromium on soils – Mechanisms**” pages 292, Lap Lambert Publishers, Germany,(2014) ISBN 978-3-659-00204-5
3. Published a technical monograph titled “**Long term prediction of contaminant transport in soils**” pages 189, Lap Lambert Publishers, Germany,(2014) ISBN 978-3-659-12542-3.

Research Projects:

Ongoing Project 1:

Research Supervisor: Dr. S.A.S. Mohammed			
Title: Heavy metal immobilization by nano metal oxide amendment in contaminated red soil and black cotton soil			
Research Scholar	USN	Full time/ Part time	Status of Progress
Kotresha K	1HK16PGJ05	Full time	Comprehensive Viva completed

Ongoing Project 2:

Research supervisor: Dr. S.A.S. Mohammed			
Title: Effect of Fly Ash Ageing on Geotechnical and Geo-Environmental Properties of Soil Mixtures			
Research Scholar	USN	Full time/ Part time	Status of Progress
Mubarak Ali	1HK19PPY01	Part time	Course Work completed

Ongoing Project 3:

Research supervisor: Dr. S.A.S. Mohammed			
Title: Improvement in geotechnical properties of problematic soils using organic based stabilizers			
Research Scholar	USN	Full time/ Part time	Status of Progress
Mohammed Abdul Lateef	1HK19PPY01	Part time	Course Work completed,Literature survey in progress.

Ongoing Project 4:

Research supervisor: Dr. S.A.S. Mohammed			
Title: Bio - stabilization; sustainable perspective for treating expansive soils			
Research Scholar	USN	Full time/ Part time	Status of Progress
Irfan Ulla Shariff	1HK19PPY01	Part time	Course Work completion under progress

Ongoing Project 5:

Research supervisor: Dr. S.A.S. Mohammed			
Title: Theoretical and experimental evaluation of enhancement in geotechnical properties of soil using bio stabilizers			
Research Scholar	USN	Full time/ Part time	Status of Progress
Madhushree KJ	1HK19PPY01	Part time	Course Work completion under progress

Details of major completed projects

1. Nano calcium silicate - soil based mineral amendments as liners for hazardous waste containment facilities. Funding Agency: **SERB- DST, Govt. of India** (Status completed 2016) **Role : Principal Investigator.**
2. "Geo-environmental benign characterization of semi-arid soils - A study aimed at deriving potential benefits from using locally available materials" Funding Agency: King Abdul Aziz City for Science & Technology (KACST) at King Saud University, Riyadh, Kingdom of Saudi Arabia, (Status completed 2016) **Role : Foreign Consultant.**

Projects submitted/ under evaluation

1. DST- Nano Mission of India, Project titled “Synthesis and evaluation of low cost nano compounds as admixture for landfill liners in problematic soils- Desorption and consolidation studies with sustainability perspective”- Status - Under evaluation. (August 2019)
2. Indian Technology – Innovation & Entrepreneurship conclave – Reva University Project proposal titled “Enzymatic remediation of soils to mitigate ground water contamination” held on 3rd& 4th January 2020. (Status – Not qualified).
3. Comprehensive setup to evaluate geotechnical properties- a project submitted to VGST under K – Fist L1 with a budget of Rs 20 lakhs during October 2018 (Status – Not qualified)
4. Synthesis and evaluation of low cost nano compounds as admixture for stabilization of problematic soils- Desorption and consolidation studies - a project submitted to SERB – DST under CORE research grant with a budget of Rs 57 lakhs during June 2018 (Status – Not qualified)