

## **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	Specialisation
Dr. Sanaulla P F	Professor & Head	1. Electrochemical studies of Corrosion Inhibition of metals and alloys, 2. Synthesis and characterisation of corrosion inhibitors. 3. Corrosion Characterisation of Metal matrix composites, 4. Synthesis and Characterisation of nano compounds, 5. Applications of nano compounds in Geo-Technical and Environmental studies, 6. Soil Remediation using nano oxides as amendments.

## **Patents filed**

Dr Sanaulla P F- 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 expedited on 15/06/2019.

## **Publications:**

1. "Evaluating Sequential Extraction Procedure to Ascertain Binding Mechanisms in Soil Nano Calcium Silicate (NCS) Mixtures. Kotresha. K, Sanaulla PF, Mohammed, S.A.S. and Moghal, A.A.B - Indian Geo Technical Journal- **Under review.**
2. Cadmium Fixation Studies on Contaminated Soils Using Nano Calcium Silicate – Treatment Strategy, Syed Abu Sayeed Mohammed, Arif Ali Baig Moghal, Sanaulla P.F, Kotresha K, Hari Prasad Reddy P, **Technical Paper Program , March 12-15, 2017, Orlando, Florida, USA. Geotechnical Frontiers 2017 GSP 276 @ ASCE, page 434-442.**

3. Sustainable use of soils amended with Nano calcium silicate mixture for Nickel encapsulation in an aqueous medium", Syed Abu Sayeed Mohammed, Sanaulla P.F, Kotresha K, Arif Ali Baig Mogha. **Materials Today Proceedings (ICNAO), ELSEVEIR**, 4 (2017) page 12271–12277.
4. Potential of Soils Amended with a Nano Calcium Silicate Mixture for Lead Encapsulation in an Aqueous Medium. Syed Abu Sayeed Mohammed, Sanaulla P.F, Munwar B Basha and Arif Ali Baig Moghal, **Geo-Chicago-2016 GSP 269 @ASCE, USA**. page 467- 276.
5. Role of different leaching methods to arrest transport of Ni<sup>2+</sup> in soil and soil amended with ano calcium silicate, Syed Abu Sayeed Mohammed, Sanaulla P.F and Arif Ali Baig Moghal **GEOCHINA -2016 GSP261 @ASCE, USA**. pp 49-56.
6. Sustainable use of locally available red earth and black cotton soils to retain Cd<sup>2+</sup> and Ni<sup>2+</sup> from aqueous solutions, Syed Abu Sayeed Mohammed, Sanaulla P. F and Arif Ali Baig Moghal, **International Journal of Civil Engineering-Springer, Iran University of Science and Technology**, DOI 10.1007/s40999-016-0052-z,30 May 2016.
7. “Effect of Electroless Cu Coating on the Mechanical properties of Al6061/SiC/Gr based Hybrid Composite”. **International Journal of Scientific & Engineering Research**, Vol 5( 3), (2014) pp1070 -1077.( **Impact factor -1.47**)
8. Inhibiting Action of Tetra-N-Butyl Ammonium Bromide And Tetra-N-Butyl Ammonium Iodide on The Corrosion Behaviour of Za-27 Alloy In 1m Na<sub>2</sub>SO<sub>4</sub>.”**International Journal of Engineering and Science (IJES)**, Vol.3, Issue. 6(2014)pp 58-68.
9. “Inhibition Action of Tetra –N – Butyl Ammonium Bromide and Tetra –N Butyl Ammonium Iodide on the Corrosion Behaviour of ZA-27 Alloy in 0.5 M NaCl.” **International Journal of Latest Technology in Engineering & Management**, Vol.III, Issue. VI, (June 2014) pp 09-18.
10. “Inhibiting Action of Quaternary Ammonium Salts on the Corrosion Behaviour of ZA-27 Alloy in 1M Na<sub>2</sub>SO<sub>4</sub>” **IOSR Journal of Applied Chemistry (IOSR-JAC)**, Volume 7, Issue 5 Ver. I. (May. 2014), (**Impact factor -1.327**).
11. “Electro chemical investigation on the corrosion behavior of ZA-27 alloy in 1MNa<sub>2</sub>SO<sub>4</sub> in the presence of cationic surfactants as inhibitors” **IOSR Journal of Humanities and Social Science (IOSR-JHSS)**, Volume 19, Issue 6, Ver. I (Jun. 2014), PP 09-20,(**Impact factor -1.589**)
12. “Inhibitive effect of N,N’-bis (Salicylidene)1-2 Diaminoethane and N,N’-bis(3-Methoxy Salicylidene)1-2 Diaminoethane on the corrosion of AA6061 alloy in Hydrochloric acid”. **Journal of Applicable Chemistry**, Vol 2(4), (2013), pp940-957.(**Impact Factor- 1.26**).

13. "Electrochemical Behaviour of AA6061 Alloy in 1M Hydrochloric Acid using Schiff Base Compounds as Corrosion Inhibitors". *J. Mater. Environ. Sci.* 4(3), (2013) PP 326-327. **(Impact Factor- 1.0923)**.
14. "Electrochemical Behaviour of AA6063 Alloy in Hydrochloric Acid using Schiff Base Compounds as Corrosion Inhibitors. *International Journal of Engineering Research and Applications* Vol. 2, Issue 5, 2012, pp 2049-2061. **(Impact Factor- 1.69)**
15. "Electrochemical investigation of corrosion inhibition of AA6063 alloy in 1M hydrochloric acid using Schiff base compounds". *IOSR Journal of Applied Chemistry*. Vol 2. Issue 5, 2012, pp37-47. **(Impact factor -1.327)**
16. "Corrosion Inhibition of AA6061 and AA6063 alloy in Hydrochloric acid media by Schiff base compounds". *J. Chil. Chem. Soc.*, 57, N° 4 (2012) PP 1364-1370. **(Impact Factor-0.67)**
17. Corrosion Characterization of TiO<sub>2</sub> Particulate Reinforced Al-6063 Composites in Chloride and Nitrate Media, *Asian Journal of Chemistry*, ISSN 0970-7077, 2011, Volume 23, Issue 4, 1664 – 1668. **(Impact factor -0.247)**
18. Influence of chlorides, nitrate and sulphate media on corrosion behaviour of TiO<sub>2</sub> particulate reinforced Al-6061 composites, *Portugaliae Electrochimica Acta*, ISSN 1647-1571, 2010, 28(5), 309-320
19. Corrosion behaviour of TiO<sub>2</sub> particulate reinforced Al-6063 composites in sodium sulphate medium, *International Journal of Applied Chemistry*, ISSN 0973-1792, Volume 6, Number 2, (2010) pp. 225–232.
20. Studies on Contaminant transport at an industrial waste dump site of Bangalore, India. Published in an *International Journal Revista Ambiente Agua Taubate – An Interdisciplinary journal of Applied Science* Volume 3, number 3, December08 Issue p55 – 66. Published by **University of Taubate, Taubate City, Brazil**.
21. "Rotational Re-Orientation times and dipole moments of Coumarin laser dye" *BARC, Mumbai January 2005*.
22. 'Studies on properties of self-setting sand using molasses as a binder and calcium oxide as a hardener" published at *Indian Foundry Journal, IIT (Madras)*, July 1995.
23. "Studies on properties of self-setting sand using molasses as a binder and sodium metaborate as a hardener" *Indian Foundry Journal IIT (Madras)*.

### **Conference Publications-10**

1. "Sorption and Entrapment of Heavy Metals In A Contaminated Soil Using Nano Calcium Silicate – A Nano Amendment". Kotresha K, Syed Abu Sayeed Mohammed, Sanaula P F. Materials for Environment, Sustainable Society and Global Empowerment -2019 (MESSAGE - 2019), **Department of Nanotechnology, Visvesvaraya Technological University** Center for Postgraduate Studies, Bengaluru Region, Muddenahalli, Chikkaballapur – 562 101.

2. "Sustainable use of soils amended with nano calcium silicate mixture for cadmium encapsulation in an aqueous medium" Sanaulla P.F, Syed Abu Sayeed Mohammed, Arif Ali Baig Moghal-presented at **International conference on Nanotechnology - 2016 (IC Nano 2016)** held during 21 - 23rd April 2016 at **VTU Center for PG Studies**, Muddenehalli, Chikkabalapur, Karnataka, India, page 58-59.
3. Effect of Nano Calcium Silicate to retain Nickel in a contaminated Steel Mill Soil. Syed Abu Sayeed Mohammed, Sanaulla P.F and Kotesha K. **Indo-Canadian Symposium on Nano-Science and Technology (ICSNST-2016)**, National Institute of Engineering, Mysore, India.
4. Studies on Sorptive Behavior of Red and Black Cotton Soils on Pb, Cd and Ni from Aqueous Medium. Syed Abu Sayeed Mohammed, Sanaulla P. F and Arif Ali BaigMoghal, **CLEAR 2014 CONFERENCE - Contaminated Land, Ecological Assessment and Remediation held at Chuncheon, Korea**, 5-8 October 2014.
5. Application of Potentiometry to study the retentivity of heavy metal ions in Red Soil. Published in an **International Conference on Frontiers in Chemical Research** Held at Mangalore University during December 2008
6. Corrosion Behaviour of Aluminium alloys in 3% and 5 % NaCl Solutions- A Potentiodynamic Study. Presented at "**National Symposium on Electrochemical Science and Technology NSEST 2008**", conducted by Electrochemical Society of India, Indian Institute of Science, (I.I.Sc) July 2008.
7. "Flood Control of a locality through Ground Water Recharge – A Case study." Published at **National Conference on Role of Civil Engineers in Disaster Management and Mitigation**, held at BMS College of Engineering from 2<sup>nd</sup> to 4<sup>th</sup> February 2006.
8. Studies on water quality of Bellandur and Varthur lakes – A Case study." Published at a **National Conference on Environment held at University of Agricultural Sciences**, Dharwad during November 2000.
9. "Studies on properties of a partially baked sand using a blend of limestone powder and organic resin as a binder" published at **40<sup>th</sup> Annual Convention of IIF, IIT (Madras)**, during February 1992.
10. Studies on properties of self-setting sand using molasses as a binder and sodium perborate as a hardener" **JNTU Hyderabad**.

## **Research Projects:**

1. Science and Engineering Research Board (**SERB**), Department of Science and Technology (**DST**), Govt. of India sponsored project (Project No. SR/S3/MERC/0111/2012), titled “*Nano calcium silicate - soil based mineral amendments as liners for hazardous waste containment facilities*” (2013 – 2016). Total budget of project **Rs 37.28 lakhs**.
2. Completed **RESPOND** project of **ISRO** Project (DOS sanction order DOS/PAD/GIA/2005-06/65/2532, dated 6th January 2006) Titled “*Stress corrosion studies on Al alloys (like AA7075 – T7351 and AA7075 – T651)*” from April 2006 to June 2009. Total budget of project **Rs 11.53 lakhs**.
3. “**Heavy Metal Immobilization by Nano – Metal Oxide Amendment in Contaminated Red soil and Black cotton Soil.** Mr. Kotresha K , USN: 1HK16PGJ05; Department of Chemistry, HKBK College of Engineering, Bangalore. Visvesvaraya Technological University, Belgaum. **Comprehensive Viva-Voce Completed- Thesis writing in Progress.**
4. “**Electrochemical Studies on Corrosion Inhibition of Aluminium alloys AA6061, AA6063 in Acidic medium using Organic compounds**”. Ms. I Nusrat Jehan, USN: 1HK16PGJ04, Department of Chemistry, HKBK College of Engineering, Bangalore. Visvesvaraya Technological University, Belgaum. **Course work Completed.**

## **Proposal Submitted:**

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”- DST NMI Online Project Management System **TPN37621**, cost of this project is **59,70,540 INR**. 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 3<sup>rd</sup>& 4<sup>th</sup> January 2020. (Status – Not qualified).
3. 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)