Dr. Tharun A. Rauf

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Nationality	:	Indian
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Place of Birth	:	Varkala, Thiruvananthapuram, Kerala.
Marital Status	:	Married
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Educational Qualifications

- **Ph.D. in Chemistry,** Department of Chemistry, Kerala University, Kariavattom, Trivandrum, Kerala (**Declared on 12.09.2013**).
- Full time research in Partial Fulfilment of Masters in Philosophy, R&D, Hindustan Latex Ltd, Thiruvananthapuram, Kerala on 'Study on the Effects of Nanofillers in Latex Thin Films'
- **M. Phil.** in Chemistry (Specialization in Polymer Chemistry), Bharathidasan University, Trichy, Tamil Nadu
- Full-Time Research in Partial Fulfilment of Masters in Chemistry, Chemical Engineering IIT Madras, Chennai, Tamil Nadu on 'FTIR studies on Polymer-Asphalt system'
- M.Sc. Chemistry (Polymer Science Elective), School of Chemical Sciences, Mahatma Gandhi University, Kerala, India
- B.Sc. Chemistry, Govt. College, Attingal, University of Kerala, Kerala.

Skills and Experience

Work Experience with Operating Systems:

Windows 98,2007, XP, Linux, Unix

Other Scientific Softwares:

ChemDraw, Scifinder, Corel Draw.

Programming Skills: Reasonably good knowledge in MS Office packages

Conducted Quiz Competitions in the College Level

Teaching Experience

1. Guest Faculty in Chemistry, Govt. College Kariavattom, Trivandrum (2006 Feb – 2006 April)
2. Guest Faculty in Chemistry, Emmanuel College, Vazhichal, Trivandrum (2005 Sept – 2005 Dec)
3. Assistant Professor in FDP Vacancy, Mannanniya College, Pangode, Trivandrum (2013 November-2015 October)
4. Guest Faculty in Chemistry, Govt. College Attingal, Trivandrum (2015 October-till date)

Working Experience

Joined as Assistant Archaeological Chemist, Archaeological Survey of India on **Jan 2011,** at the O/o The Director (Science), Dehra Dun. Last working place was at the World Heritage Site - Ajanta.

Research Experience

PhD: Synthesis and Characterization of Cellulose and Silane-Based Adsorbents Bearing Different Functional Groups and Their Applications for the Extraction of Some Organic and Inorganic Moieties

Summary of the PhD work:

Our aim was to synthesise three types of adsorbent materials and its application in the removal of Pollutants (heavy metals) as well as in the Drug Delivery System. The first two adsorbent materials were polymer scaffolds – an IPN system (Organo-Inorganic Polymer hybrid) and another polymer synthesized through ring opening mechanism. The third adsorbent was an inorganic adsorbent material. The adsorbent materials synthesized were well characterized using FTIR, SEM/EDS, XRD, and TG/DTG instruments. The pollutants selected were Uranium(VI), Methylene Blue (MB), Phosphate, Nitrate, and Fluoride ions. The model drugs selected were Bovine Serum Albumin (BSA), Lysozyme (LYZ) and Trypsin (TRY). The adsorption studies were conducted and substantiated the mechanism by studying the various kinetic and isotherm models. Adsorption/desorption studies and the competitive studies revealed the repeatability of the adsorbent material, its stability over a minimum six cycles and its advantages over the earlier reported adsorbent materials.

PROJECT TECHNICIAN at Sree Chithira Thirunal Institute of Medical Science and Technology BMT Wing, Thiruvananthapuram. (12/2002-02/2004)

Summary of the Project work:

A novel dual cure dental composite was synthesized and its hardness, tensile strength, flexural strength was tested in UTM Instron. The well characteristic composite was then evaluated for toxicology. The experiment was conducted in rats, guinea pigs, rabbits and pigs. The results proved that the composite is biocompatible with the human tissue.

A single solution bonding agent was developed for dental adhesion. The solution was characterized using UV, FTIR and NMR. Toxicological evaluations and UTM testing was conducted. The compound was proved to be cost effective, biocompatible, and biodegradable.

M.Phil. Dissertation: Study on the Effects of Nanofillers in Latex Thin Films.

Summary:

Various types of Nanofillers like bentonite and clays were mixed with the latex under varying conditions. Samples were prepared and it was then tested with the Universal Testing Machine. The testing proved that we can produce cost effective, biocompatible and biodegradable products with high tensile strength. Bentonite was proved to be more effective than the clays we used since impregnation of polymer matrix is effecting when bentonite is used.

M.Sc. Dissertation: FTIR studies on Polymer Asphalt systems

Summary:

The interaction of asphaltene from the asphalt with the polymers was studied using FTIR spectroscopic method. The asphaltene was separated from the asphalt and it was then allowed to interact with two type of polymers, Non Polar and Polar Polymers. Based on these studies the bitumen samples mixed with the polymers were found to be effective usages in roofing and also in tarring. It was proved more advantageous to the then used materials.

Publications

1. "Development and Evaluation of a Single Solution Bonding Agent as a Dental Adhesive". V. Kalliyana Krishnan, P.P. Lizymol, T.V. Kumari, **Tharun A. Rauf**, and M.M. Thomas. J. Polym. Mater. 22 (2) 2005, 145-152.

2. Thayyath S. Anirudhan**, Abdul R. Tharun,** Sreenivasan Rijith, Padmajan S. Suchithra. Synthesis and Characterization of a Novel Interpenetrating Polymer Network (IPN) Containing Carboxyl Groups and its Application to Extract Uranium(VI) from Aqueous media, *Journal of Applied Polymer Science* 122, **2011**, 874-884.
3. T.S. Anirudhan**, A.R. Tharun** and S.R. Rejeena. Investigation on Poly(Methacrylic Acid)-Grafted Cellulose/ Bentonite Superabsorbent Composite: Synthesis, Characterization and Adsorption Characteristics of Bovine Serum Albumin, *Industrial Engineering and Chemical Research* 50, **2011**, 1866-1874
4. T.S. Anirudhan, **A.R. Tharun**, Preparation and adsorption properties of a novel interpenetrating polymer network (IPN) containing carboxyl groups for basic dye from aqueous media, *Chemical Engineering Journal* 181-182, **2012**, 761-769.

5. T.S. Anirudhan, **Tharun A. Rauf**, S. R. Rejeena, Removal and recovery of phosphate ions from aqueous solutions by amine functionalised epichlorohydrin – grafted cellulose, *Desalination*, 285, **2012**, 277-284.
6. Thayyath Sreenivasan Anirudhan, Sreenivasan Rijith, **Abdul Rauf Tharun**, Adsorptive removal of thorium(IV) from aqueous solutions using poly(methacrylic acid)-grafted chitosan/bentonite composite matrix: Process design and equilibrium studies, *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, 368, **2010**, 13-22.
7. T.S. Anirudhan, P.S. Suchithra, P. Senan and **A.R. Tharun**, Kinetic and Equilibrium Profiles of Adsorptive Recovery of Thorium(IV) from Aqueous Solutions Using Poly(methacrylic acid) Grafted Cellulose/Bentonite Superabsorbent Composite, *Industrial Engineering and Chemical Research* 51, **2012**, 4825−4836
8. Thayyath Sreenivasan Anirudhan, Sylaja Raveendran Rejeena, **Abdul Rauf Tharun**, Preparation, characterization and adsorption behavior of tannin-modified poly(glycidylmethacrylate)-grafted zirconium oxide-densified cellulose for the selective separation of bovine serum albumin, *Colloids and Surfaces B: Biointerfaces* 93, **2012**, 49– 58
9. T.S. Anirudhan, **Tharun A. Rauf**, Adsorption performance of amine functionalized cellulose grafted epichlorohydrin for the removal of nitrate from aqueous solutions, *Journal of Industrial and Engineering Chemistry* 19 (2013) 1659–1667
10. T.S. Anirudhan, **Tharun A. Rauf**, Lysozyme immobilization via adsorption process using sulphonic acid functionalized silane grafted copolymer, *Colloids and Surfaces B: Biointerfaces* 107 (2013) 1– 10
11. T.S. Anirudhan, **Tharun A. Rauf**, Silane graft copolymer modified with sulphonic acid functional groups used for the immobilization of trypsin from aqueous solutions via adsorption process, *Journal of Industrial and Engineering Chemistry***,** 20 (2014) 1901-1910
12. Thayyath Sreenivasan Anirudhan, Sylaja Raveendran Rejeena, and **Abdul Rauf Tharun**, Investigation of the Extraction of Hemoglobin by Adsorption onto Nanocellulose-Based Superabsorbent Composite Having Carboxylate Functional Groups from Aqueous Solutions: Kinetic, Equilibrium, and Thermodynamic Profiles, *Ind. Eng. Chem. Res*. 2013, 52, 11016−11028.
13. **Tharun A. Rauf**, TS Anirudhan**,** Synthesis and characterization of sulphonic acid ligand immobilized Aminopropyl silanetriol copolymer and evaluation of its

Bovine serum albumin adsorption efficiency, Materials Today Proceedings, 41, 2021

Conferences/Workshops

1. Paper presentation on ICETESE2009, Aligarh Muslim University, Aligarh, India; In collaboration with The University of Toledo, Ohio, USA; **2009**.
2. Paper presentation on 97th Indian Science Congress, Kerala University, Thiruvananthapuram, **2010**.
3. Paper presentation on 47th Annual Convention of Chemists-2010 & International Conference on Recent Advances in Chemical Sciences, Pt. Ravishankar Shukla University, Raipur, India, **2010**.
4. National Seminar on Drug Design, Open Source Drug Discovery (OSDD), CSIR, New Delhi; In association with Academy of Chemistry Teachers, Thiruvananthapuram, Kerala, **2010**.
5. Participated in a workshop on Practical in Chemistry conducted by Academy of Chemistry Teachers, Kerala on **17.01.2015**
6. Talk on Cheminformatics at a National Seminar conducted by the Dept. of Chemistry, NSS College, Nilamel on **04.03.2015**
7. Chaired sessions at the National Seminar on 'Frontline approaches in material science and computational chemistry [MATCOM-2018] jointly organized by SN Women's college, Kollam and KSCSTE, Trivandrum during **14-16 March 2018**.

Book chapter

S.No	Title	Author's Name	Publisher	Year of Publication
1	Blended Polymer Foams	Dr. Tharun A. Rauf and Dr. Athira CJ	CRC Press, Taylor and Francis Group	2023