### Dr. Sunil K .Narayanankutty

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Professor and Former Head, CUSAT

Former Controller of Examinations, CUSAT

Former Member, Syndicate, CUSAT

Former Dean, Faculty of Technology, CUSAT

Former Director, International Relations and Academic Admissions, CUSAT

Member, Academic Council, CUSAT

#### **Education**

Ph.D	IIT, Kharagpur	Composites	1992
M. Tech	CUSAT	Polymer Technology	First Rank
M. Sc	CUSAT	Applied Chemistry	First Rank
B.Sc	Calicut Uty	Chemistry	Gold Medal
SSLC	State Board	General	School Topper

	Conducting polymer systems	
	Nanocomposites	
Research	Short Fiber-Rubber Composites	
	New Compounding Ingredients for Rubbers	
	Recycled Rubber	
	Total - 176	
publications	International Journals- 86	
publications	Conferences – 90	
	Books edited –1	
Ph. D.	Awarded 17	
FII. D.	Currently working 7	
Funding	170 Million INR	
QIP Courses Attended	7	
International Conferences coordinated	5	

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## Research

 Worked extensively in developing polymeric systems based on conducting nanofillers for EMI shielding, super capacitors, sensors for strain, humidity and ammonia.

- Developed nano composites based on cellulose isolated from different natural sources and designed rubber composites through latex stage masterbatching.
- The use of coir as a filler in polymer matrices has been studied extensively and developed highly fire resistant composites for commercial applications.
- Developed antibacterial urinary catheters based on natural rubber for prolonged use.
- The applications of graphene oxide and reduced graphene oxide in tyre compounds been studied systematically.
- Developed polymer/ceramic composites for super capacitor applications.
- Developed anti corrosive coatings and antifungal pants for protection of metals.
- Studied extensively the use of natural oils in the compounding of natural and synthetic rubbers.

# **Other Experiences**

- 1. Member, Faculty of Technology, CUSAT
- 2. Member, Academic council, CUSAT
- 3. Member, Research Advisory Committee, CUSAT
- 4. Member, International Relations Group, Govt. of Kerala.
- 5. Business Advisory Committee, Rubber Skill Development Council, Govt.of India
- 6. Member, Panel of experts, Ministry of Chemicals and Fertilizers, Govt.of India
- 7. Member, Expert Committee of UGC for evaluation of ongoing Major Projects
- 8. Member of Interview Board, Spices Board, Govt. of Kerala
- 9. Member, Technical Committee for Boat, constituted by Surface Water Transport Department, Govt.of Kerala.
- 10. Member, Board of experts for the recruitment of Faculty, CUSAT
- 11. Member, Advisory committee, Centre for Science in Society
- 12. Member, CAT monitoring committee, CUSAT
- 13. Member, Grievance redressal cell for settling complaints related to Common Admission Test.

- 14. Member, Scrutiny committee to monitor the effective implementation of the Erudite 'Scholars-in- residence Programme'.
- 15. Member. Selection committee for recruitment of Professors. CUSAT
- 16. Member, Committee for inspection of recognized institutions of CUSAT
- 17. Member, IQAC core committee
- 18. Member, Monitoring committee for Virtual Centres.
- 19. Member, Deans Committee
- 20. Member, evaluation committee for Seed Money to new teachers
- 21. Member, evaluation committee for funding of Research Intensive Departments
- 22. Member, committee for framing modalities for AICTE Examination Reforms in TEQUIP III Institutions.
- 23. Member, Technical Committee for purchase of equipment for purchase of equipment under KIIIFB
- 24. Member, University Level Implementation and Monitoring Committee for e- Governance.
- 25. Member Editorial Board, Annual Report
- 26. Member, Committee for Selection of Chancellors Chair in the campus.
- 27. Member, Library Advisory Committee
- 28. Member. KIIFB Coordination Committee.
- 29. Member, M V Pylee Award Committee.
- 30. Member, Doctoral Committee, NIIST, Trivandrum
- 31. Member, Doctoral Committee, IIST, Trivandrum
- 32. Member, Doctoral Committee, IIIT-M, Kerala
- 33. Member, Doctoral Committee, NPOL, Trikkakara
- 34. Member, Selection committee for the selection of Principal, UCE, MG University.
- 35. Member, Special Committee to monitor and speed up the procedures related to collaboration proposals. (CUSAT)
- 36. Chairman, Committee for scrutiny of patent applications, CUSAT
- 37. Member, BOS, St. Teresa's college, Ernakulam
- 38. Member, BOS, Fathima Matha College, Kollam.
- 39. Former member, Senate, CUSAT,
- 40. Former member, Staff Council, CUSAT.

#### **LIST OF TOTAL PUBLICATIONS**

- High dielectric constant, flexible and easy-processable calcium copper titanate/thermoplastic polyurethane (CCTO/TPU) composites through simple casting method, Lakshmi Variar, M. N. Muralidharan, Sunil K. Narayanankutty, Seema Ansari, Journal of Materials Science: Materials in Electronics volume 32, 5908–5919(2021), https://doi.org/10.1007/s10854-021-05311-z
- Preparation of chemically functionalized and self compatibilized short coir fiber- High density polyethylene composites S ArchanaBabuand Sunil K Narayanan Kutty, J. Appl. Polym. Sci., 138 (36), 2021, September 20, p 1097-4628
- 174 Electrochemical Studies On Corrosion Resistance Of Coatings Based On Polyaniline And Silica Gel, Soumya C.C.1,2, Sunil K. Narayanankutty, K.E. George, Advanced Materials Research, Approved: 2021-04-20 publisher https://www.scientific.net

- Styrenated phenol modified nanosilica for improved thermo-oxidative and mechanical properties of natural rubber, Dileep p., Sunil K. Narayanankutty, Polymer Testing, vol. 82, article no. 106302, February 2020
- Functionaliaed nanosilicas an intimicrobial additive for waterborne paints, P. Dileep, Sinto Jacob, Sunil K. Narayanankutty, Prog. in Org. Coatings, Vol. 142, 105574, May 2020
- Development of polypropylene composites with good electrical conductivity and high dielectric constant, Thekkedath, J., Bipinbal, P. K., Thomas, T. Narayanankutty, S. K., Journal of Advanced Scientific Research. 11, pp 101–108, 2020.
- A novel method for preparation of nanosilica from bamboo leaves and its green modification as a multi-functional additive in styrene butadiene rubber, P. Dileep, Sunil K. Narayanankutty, Materialstoday Communications, 24, art. No. 100957, Sept. 2020
- High dielectric constant polymer nanocomposite for embedded capacitor applications, V P Anju, S K Narayanankutty, Materials Science and Engineering: B 249, 114418, 2019 doi.org/10.1016/j.mseb.2019.114418
- Development and characterisation of natural rubber gelatin blends with improved biodegradability, Gean A. Varghese, Bipinbal P K, Dileep P, Eby Thomas Thachil, Sunil K. Narayanankutty, Int. J. Adv. Res, Eng. Tech., 10(3), 69-80, 2019. (May-june, ISSN Online: 0976-6499, Article ID: IJARET 10 03 007)
- An innovative approach to utilize waste silica fume from zirconia industry to prepare high performance natural rubber composites for multi-functional applications, P. Dileep, Gean A. S. Sivakumar, Sunil K. Narayanankutty, Polym. Testing., 81, 106172 (2019)
- Dopant Variation as a Probe into the Antimicrobial activity of Polyaniline/Carbon nanofiber/Poly (methylmethacrylate) Composite, V P Anju, S K Narayanankutty, Chemistry Select 3 (40), 11200-11209, 2018, doi.org/10.1002/slct.201802527
- Effect of dopant on the properties of polyaniline/carbon nanofiber composites, V P Anju, S K Narayanankutty, Polymer Bulletin 76 (10), 5253-5267, 2018, DOI: 10.1007/s00289-018-2649-7
- A comparative study on electromagnetic interference shielding effectiveness of carbon nanofiber and nanofibrillated cellulose composites, V P Anju, M Manoj, P Mohanan, S K Narayanankutty, Synthetic Metals 247, 285-297, https://doi.org/10.1016/j.synthmet.2018.12.021
- A novel humidity and ammonia sensor based on nanofibers/polyaniline/polyvinyl alcohol, V P Anju, PR Jithesh, S K Narayanankutty, Sensors and Actuators A: Physical 285, 35-44, 2018 doi10.1016/j.sna.2018.10.037
- Impact of Bis-(3-triethoxysilylpropyl) tetrasulphide on the properties of PMMA/Cellulose composite, V P Anju, S K Narayanankutty, Polymer 119, 224-237, 2017, doi.org/10.1016/j.polymer.2017.05.034
- Viscoelastic behavior of Silica filled Natural rubber composites: Correlation between shear and elongational testing, Julie Chandra, Bipinbal P.K. and Sunil K. Narayanankutty.. Polymer Testing 60 (2017), 187-197.
- Polyaniline coated cellulose fiber/polyvinyl alcohol composites with high dielectric permittivity and low percolation threshold, V P Anju, S K Narayanankutty, AIP Advances 6 (1), 015109, 2016 doi.org/10.1063/1.4940664

- 159 Isolation and characterization of cellulose nanofibrils from arecanut husk fibre, Julie Chandra C.S., Neena George, Sunil K. Narayanankutty, Carbohydrate Polymers, 142, 158-166, 2016
- 158 Reduction of Free Formaldehyde Content in Resol Using Urea as Scavenger, Resmi.V.C, Sunil. K. Narayanankutty. Journal of Engineering Technology Science and Research, ISSN 2394 3386, Volume 2 Issue 2, 61-70, 2015
- 157 Improved strain sensing property of functionalised multiwalled carbon naotube/polyaniline composites in TPU matrix, A.P. Sobha, Sunil K. Narayanankutty, Sensors and Actuators A: Physical, 233, 98-107, 2015
- DC Conductivity retention of functionalised multiwalled carbon nanotube/ polyaniline composites, A.P. Sobha, Sunil K. Narayanankutty, Mat. Sci. in Semiconductor Processing, 39, 764-770, 2015
- Mechanical, Thermal and Rheological properties of dynamically vulcanized Natural Rubber-toughened Polystyrene, G. Jayalatha, Sunil K.N. Kutty; Journal of Elastomers and Plastics, 47 (2), 153-169, 2015 (DOI: 10.1177/0095244313507802)
- Electrical and Thermoelectric Properties of Functionalized Multiwalled Carbon Nanotube/Polyaniline Composites Prepared by Different Methods, Sobha.A.P and Sunil.K.Narayanankutty, IEEE Transactions on Nanotechnology, , ISSN 1536-125X, 13, 4, 835 841, 2014
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- Synthesis and Modification of Low-Formaldehyde Resol Resin Using Sodium Sulphite and Hydroxylammine Hydrochloride., Resmi.V.C, Sunil. K. Narayanankutty. Indian Journal of Advances in Chemical Science 2, 2014, 19-23.
- 150 Effect of Short Nylon-6 Fibres on Natural Rubber-Toughened Polystyrene, G. Jayalatha, Sunil K.N. Kutty; Materials & Design, 43, 291-298, 2013
- Short Nylon-6 Fibre Reinforced Polystyrene/Natural Rubber blends: Effect of Maleated-Polystyrene compatibiliser; G. Jayalatha, Sunil K.N. Kutty; Polymers and Polymer Composites, 21, 533-541, 2013;.
- Enhanced electrical conductivity of polypyrrole/ polypyrrole coated short nylon fiber/ natural rubber composites prepared by in situ polymerization in latex, Pramila Devi D.S., Bipinbal P.K., Jabin T., Sunil K.N. Kutty, Materials and Design, 43, 337-347, 2013
- Synthesis characterization of conducting composites of polypyrrole / polypyrrole coated short nylon fiber and natural rubber, Pramila Devi, D.S., Jabin Thekkedath, Sunil K. Narayanankutty, Polymer-Plastics Technology and Engineering, 51, 823-831, 2012
- Mechanical Thermal and microwave properties of conducting composites of polypyrrole/ polypyrrole coated short nylon fiber with acrylonitrile butadiene rubber, D.S Pramila Devi, Ajalesh B. Nair, T. Jabin, Sunil K. N. Kutty, J. of Appl., Polym. Sci., 126, 1965-76, 2012

- Hybrid composite based on nanosilica, Nylon 6 short fiber and Styrene butadiene rubber a study on the effect of fillers and bonding agent, Leny Mathew and Sunil K.N. Kutty, Progress in Rubber, Platics and Recycling Technology, 26 (1), 1-20, 2010
- Synthesis, characterisation and performance of nanosilica as filler in natural rubber compounds, Leny Mathew and Sunil K. Narayanankutty, J. Rubber Research, 13(1), 27-43, 2010
- Cure characteristics and mechanical properties of HRH bonded nylon-6 short fibernanosilica- acrylonitrile butadiene rubber hybrid composite, Leny Mathew and Sunil K. N. Kutty, Polymer-Plastics Technology and Engineering, 48, 75-81, 2009
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- An elastomeric Conducting Composite based on Polyaniline coated Nylon fiber and Chloroprene rubber; Saritha Chandran A, Sunil K. Narayanankutty, European Polymer Journal, 44(7):2418-2429, 2008.
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- 131 Characterization of short Nylon -6 fiber / Acrylonitrile butadiene rubber composite by Thermogravimetry, A. Seema and Kutty S.K.N, Int. J. Polym Ana. Char, 10, 169-178, 2005.
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- 119 Effect of urethane based bonding agent on the Cure Characteristics and mechanical properties of Styrene Butadiene Rubber Whole Tyre Reclaim short Nylon Fiber composites, Sreeja T.D and Kutty S.K.N., Progress in Rubber Plastics and Recycling Technology, 18(4), 1, 2002.
- 118 Effect of urethane based bonding agent on the cure characteristics and mechanical properties of Natural Rubber-Whole Tyre Reclaim short Nylon Fiber composites, Sreeja T.D and Kutty S.K.N., Polymer Plastics Technology and Engineering, 41(1), 77, 2002.
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- 92 Evaluation of Thermal stability flammability and visco elastic properties of Coir fiber reinforced polymer composite, International conference on Advances in Polymer Technology (APT-21), Department of Polymer Science and Rubber Technology, Cochin University of Science and Technology, Cochin, 2021.
- 91 Low-cost epoxy/CB composites for EMI shielding application, Lakshmi Variar C. V, M. N. Muralidharan, Sunil K. Narayanankutty and A. Seema, International conference on MultifunctinalElectronic Materials and Processing (MEMP-2021) on 8-10th March 2021 at C-MET, Pune (Poster)
- 90 Effect of carbon black incorporation into calcium copper titanate (CCTO) /epoxy composites for EMI shielding application,Lakshmi Variar C. V, M. N. Muralidharan, Sunil K. Narayanankutty and A. Seema, International Conference on Advances in Polymer Technology (APT-2021) om 27-29 May 2021 at Department of Polymer Science and Rubber Technology, CUSAT (Oral)
- Preparation of flexible photoluminescent films from cellulose and XNBR, International seminar on Advances in Polymer Technology (APT21) organised by the Department of Polymer Science and Rubber Technology (PSRT), CUSAT 27 to 29, March 2021 at CUSAT
- Synthesis and characterization of high dielectric constant PMN-PT for embedded capacitor application, LakshmiVariar C.V, M.N.Muralidharan, Sunil.K.Narayanankutty and A.Seema, NationalConference on Advanced Materials and Techniques for Emerging Applications (AMTEA-2019) on 13th to 14th February 2019, Perumpilavu, Thrissur (oral)
- 87 PMN-PT/Polymer composite thin films for energy harvesting application, LakshmiVariar C.V, M.N.Muralidharan, Sunil.K.Narayanankutty and A.Seema, International Conference on Supercapacitors and Energy Storage Applications (ICSEA2019) on 8-10 march 2019, Thrissur (poster)
- Dielectric characteristics of Thermoplastic polyurethane/CCTO composites, Lakshmi Variar C. V, M. N. Muralidharan, Sunil K.Narayanankutty and A. Seema, National Conference on Current Trends in Polymer Science (CTPS'2019) on 22nd March 2019 at CUSAT, kalamassery (Poster)
- Isolation of Biomass Derived Nanoprecursors for the Synthesis of Photoluminescent Cellulose Nanowhiskers, MHRD sponsored 3rd International Conference on Optoelectronic and Nano Materials for Advanced Technology (ICONMAT 2019) Jointly Organized by Centre of Excellence in Advanced Materials Inter University Centre for Nanomaterials and Devices, CUSAT on January 3-5, 2019 at CUSAT

- Synthesis of Photoluminescent Cellulose Nanowhiskers from the Fresh Water Weed EichhorniaCrassipes, UGC -SAP sponsored National Conference on Current trends in Polymer science (CTPS 2019) organised by the Department of Polymer Science and Rubber Technology (PSRT), CUSAT on 9 March 2019 at CUSAT
- Flame resistant behavior and thermal stability of coir fiber reinforced polymer composites, International Seminar on Material Science & Organic Synthesis Albertian Knowledge Summit (AKS-2019) Department of Chemistry, St. Albert's College (Autonomous), Ernakulam
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- Preparation, mechanical and solvent interaction studies of novel composites from of gelatin, cellulose and carboxylated nitrile rubber, Dept. of Collegiate education, Kerala sponsored International Conference on Sustainable Innovations in Green Chemistry and New Technological Developments (ICSIG-2018)
- Gelatin-Natural Rubber blends: Study on biodegradability and thermal stability International Symposium on New Trends in Applied Chemistry (NTAC -2017) on 9-11 February, 2017 at Sacred Heart College (Autonomous), Thevara, Kochi, India organised by Sacred Heart College, Thevara, Kochi, India
- Preparation and Characterization of Bioblends from Gelatin and Natural Rubber UGC sponsored national seminar Advancements in Polymer Science and Technology on 24th & 25th January 2017 at St Teresas College Ernakulam jointly organised by St Teresas College Ernakulam, PSRT, CUSAT & M.G. University, Kottayam
- Humidity and Ammonia Sensor Based on Nanofibers/Polyaniline/Polyvinyl alcohol, V.P. Anju and Sunil K. Narayanankutty, Emerging Trends in Nanocomposites, KSCS, October, 2017, Kerala, India (Second prize)
- Development of flame resistant composites based on coir fiber and High density olyethylene., International conferences on Advances in Polymeric Materials [APM-2017], IISC, Bangalore.
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