

CONTACT

MINU SAJI

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15 Washington Street, Newark, NJ 07102

EDUCATION

2021- Present

RUTGERS UNIVERSITY- NEWARK

Ph.D. CANDIDATE IN CHEMISTRY (Research Advisor: Dr. Fei Zhang)

2016-2021

INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH, THIRUVANANTHAPURAM

BS-MS DUAL DEGREE (KVPY Fellow)

2013-2015

RAJAGIRI PUBLIC SCHOOL

ALL INDIA SENIOR SCHOOL CERTIFICATE EXAMINATION (AISSCE), CENTRAL BOARD OF SECONDARY EDUCATION (A1 in all subjects)

RESEARCH INTERESTS

DNA Nanotechnology | Supramolecular Chemistry | Organic Synthesis | Chemical Biology | Materials Science

RESEARCH EXPERIENCE

2018- Present

MAJOR PROJECT (CHEMISTRY)

Guide: **Dr. Reji Varghese**, Associate Professor, IISER-TVM

High Fluorine content DNA based nanoparticle: a universal "OFF/ON" probe for the detection of various biomarkers

- ✓ Nanoparticles were formed by the self assembly of DNA based amphiphiles consisting of Fluorinated alkyl chain as the hydrophobic segment, which serves as a probe for detection of various biomarkers via ^{19}F NMR "OFF/ON" response (2021)

Design and synthesis of Hexaphenylbenzene based DNA decorated asymmetric nanosheets

- ✓ Bolaamphiphiles consisting of two different oligonucleotides appended on two sides of Hexaphenylbenzene derivatives were synthesized which undergoes amphiphilicity driven self assembly to give DNA decorated asymmetric nanosheets and their photophysical properties studied (2020)
- ✓ Hexaphenylbenzene derivative bearing two Benzyl alcohol moieties was synthesized and successfully conjugated to DNA using standard Phosphoramidite chemistry, to effect amphiphilicity driven self assembly into symmetric nanosheets (2018)

Design and synthesis of DNA-Porphyrin nanodots for photothermal cancer therapy

- ✓ A template assisted polymerization of porphyrin moiety on a DNA backbone via electrostatic interactions, self assembly of which results in nanostructures for potential photothermal therapy applications (2020)

Design and synthesis of photoresponsive DNA Hexaphenylbenzene hybrid amphiphile

- ✓ Exploring a supramolecular approach for the design and synthesis of Azobenzene tethered HPB- DNA conjugate for the fabrication of nanostructures with a photoswitchable unit, Azobenzene, which can reverse the helicity upon photo-isomerization (2019)

Jan 2020- April 2020

MINOR PROJECT (BIOLOGY)

Guide: **Dr. Satish Khurana**, Assistant Professor, IISER-TVM

Role of Integrin Signalling in SDF-1 α Expression in ST2 Cell line

- ✓ To standardize the role of various signaling pathways like AKT, FAK and integrin signaling in the expression of SDF-1 α in mouse stromal cells by treatment of the cultured cells with specific concentrations of pathway inhibitors individually and in combination, followed by gene expression studies using RT-PCR

Jan 2018- April 2018

BS-MS CHEMISTRY LAB PROJECT

Guide: **Dr. Jayakumar**, IISER-TVM

- ✓ Estimation of conductivity at **critical solution temperature** for various compositions of phenol- water mixture.

SKILL SET

- Proficient in Organic Synthesis, Inorganic reactions, Moisture sensitive reactions
- **Spectroscopy:** Well experienced in NMR, UV-Visible Absorption and Emission Spectroscopy, Mass Spectrometry (GC-MS, HRMS, MALDI-TOF), IR spectroscopy
- **Chromatography:** Thin layer chromatography, Column chromatography, HPLC
- Proficient in Cyclic Voltammetry and Polarimetry. Theoretical knowledge and basic practical experience with Circular Dichroism Spectroscopy, Atomic Force Microscopy, Transmission Electron Microscopy and Time Correlated Single Photon Counting
- **DNA Studies:** Automated Solid Phase DNA Synthesis, Polymerase Chain Reaction
- **Biology:** Proficient in Cell Culture techniques, RNA isolation (Trizol/Column method), NanoDrop, Polymerase Chain Reaction (Biorad PCR following Takara protocol), Real Time Polymerase Chain Reaction (Bio Rad Real Time q-PCR) and cell counting on Hemocytometer
Hands on experience with sectioning of mouse brain. Familiar with Western Blotting, Agarose gel electrophoresis and SDS PAGE
- **Software:** Proficient in using ChemBioDraw Ultra 12.0, OriginPro 9.0., Bruker Topspin, MS Office. Basic experience with Gaussian 16, Matlab, Mathematica, SciFinder-n

CONFERENCES AND WORKSHOPS

- **2nd ChemPhysChem Virtual Symposium on Supramolecular Chemistry**, October, 2020
- **EurJOC Virtual Symposium Special Edition: Journée DCO**, September 2020
- **1st Frontier Symposium in Chemistry 2020 (FS – CHM 2020) | IISER TVM**, January 2020, Kerala, India
- **Workshop for College Chemistry Students and Teachers | Foundation for Capacity Building in Science (FCBS), Trivandrum and JNCASR**, Bengaluru, October 2018, Kerala, India
- **NATIONAL SCIENCE CAMP (VIJYOSHI)**- December 2017
A forum of interaction between selected young students and leading researchers in Science and Mathematics held at Indian Institute of Science, Bengaluru, India

SCHOLARSHIPS AND ACHIEVEMENTS

- **Kishore Vaigyanik Protsahan Yojana (KVPY) Fellow**, Highest Undergraduate fellowship awarded in India in Science and Technology (2017)
- **Innovation in Science Pursuit for Inspired Research (INSPIRE) Scholar**, Undergraduate fellowship awarded by Department of Science and Technology (DST) in India (2016)
- **Distinction** in Science in the **International Assessments of Indian Schools**, conducted by University of New South Wales (UNSW), Australia (2010, 2011)
- **Distinction** in Mathematics in the **International Assessments of Indian Schools**, conducted by the University of New South Wales (UNSW), Australia (2010)