PERSONAL PROFILE:

Name : Dr. ANDREA SANDRA CHRISTINE D'CRUZ

Date of birth : 19-12-1987

Address : A/204 Dalkania Bldg, Behind SBI Bank, Vakola Pipe Line, Santacruz East, Mumbai 400 055, Maharashtra, India

Contact Number : +91-9787238896

E-Mail : andydcruz19@gmail.com

EDUCATIONAL PROFILE

Degree/ Standard	Institution name	Class	Year of Passing
Ph.D (Organic Chemistry, 2012-2016)	Annamalai University	I	Viva-voce completed (January 23rd, 2017)
M.Sc (Chemistry)	Karunya University	I	2011
B.Sc (Chemistry)	Sophia College for Women	II	2009
H.Sc	Sophia College for Women	II	2006
S.Sc	St. Charles High School	I	2003

Ph.D Research Work: (October 2012 – July 2016):

Title: "SYNTHESIS, CHARACTERISATION AND SELF-ASSEMBLY OF NEW PERYLENE TETRACARBOXYLIC DIIMIDES"

Supervisor Name: Prof. Dr. K.R. SANKARAN

Department of Chemistry, Annamalai University

Thesis abstract/objective: The main aim of the research work carried out in the thesis were to make use of low cost linear chain primary alkyl amines and anilines having different functionality. The reason PTCDIs were studied is because as according to literature reports they are proven to be active materials and suitable candidates that can be used in the field of organic electronics known for its high performance. They are known to cater to the growing demands of opto-electronic materials and are hence known to find its applications in a wide

range of applications ranging from paints and lacquers, especially in the automobile industry and on the whole the organic electronic industry.

Studies carried out for the synthesis and characterization of **PTCDIs** are as follows:

- ✓ FT-IR
- ✓ ^{1}H NMR
- ✓ ^{13}C NMR
- ✓ MS-EI
- ✓ Absorption studies (UV-Vis and fluorescence microscopic techniques)
- ✓ Differential scanning calorimetry
- ✓ Self-assembly
- ✓ Microscopic measurements (SEM, AFM, fluorescence microscopy, optical microscopy and phase microscopy were used to study the compounds morphological features)

  Besides this, various computational studies such as

  - Optimized geometry
  - HOMO-LUMO
  - NMR shielding
  - Mulliken charge transfer
  - Natural bond order analysis

  were studied for the synthesized compounds by using the *Gaussian 09W* software package (Becke-Lee-Yang-Parr hybrid density functional method) with a 6-31++ G (d,p) basis set combination.

PUBLICATIONS

1. Optical and Self-Assembly studies of some New Perylene Tetracarboxylic Diimides **Andrea Sandra Christine D′Cruz**, K.R. Sankaran*, ***DJ Journal of Engineering Chemistry and Fuel***, Vol. 1(4) 2016, pp. 23-42
2. Synthesis and Self-Assembly of Some Newly Synthesized Perylene Tetracarboxylic Diimides, **D′Cruz ASC and Sankaran KR**, ***Research & Reviews: Journal of Chemistry***, 13/09/2016

3. Spectroscopic Studies of the Optical, Thermal and Morphological Properties of a Newly Synthesized Self-Assembled PTCDI, **Andrea Sandra Christine D'Cruz** and Sankaran KR*, ***Canadian Chemical Transactions***, Year 2016, Volume 4, Issue 2, Page 267-283
4. Effect of side chain substituents on the geometrical pattern of some newly synthesized perylene tetracarboxylic diimides using DFT Calculations, **Andrea Sandra Christine D'Cruz** and Sankaran KR*, ***International Journal of Chemical and Pharmaceutical Sciences***, 2014, Dec., Vol. 5 (4)
5. Insight and Outlook to Natural Dyes, **Andrea Sandra Christine D′Cruz**, ***Chemical World***, October, 2012

QUALIFICATIONS: Certificate course in "Human Rights" (First class with distinction), May 2014, Annamalai University, Chidambaram, Tamil Nadu

2009 – 2011 M.Sc Chemistry,

Karunya University, Coimbatore, Tamil Nadu

Modules included: Organic, Inorganic, Physical, Analytical, Polymers, Medicinal/Drugs, Electrochemistry, Statistical Maths

Project Title: "Synthesis and characterization of NiO nanoparticles by different chemical methods" *viz*

- chemical precipitation
- sol-gel
- electro-spinning

2006 – 2009 B. Sc Chemistry

Sophia College for Women, Mumbai

Modules included: Organic, Inorganic, Physical, Analytical, Drugs and Dyes, Statistical Maths

Project Titles undertaken during degree course:

- Natural dyes- **TY.B.Sc**
- Estimation of calcium in different milk powder samples-**TY.B.Sc**

- Determination of phosphates in various cola samples by molybdenum blue method using UV-Vis spectrophotometer-**SY.B.Sc**

RESEARCH INTERESTS

- Organic synthesis, Supramolecular chemistry, analytical chemistry and computational characterization
- Prediction of structures with the help of chem draw and NMR studies
- Spectroscopy investigations (UV-Vis, fluorescence, SEM, AFM, fluorescence microscopy, phase contrast micrscopy) to gather more information about the synthesized organic compounds
- Use of semiconducting dyes for applications in organic electronics *viz*, thin films
- Study of natural dyes
- Paints for use in architectural domain
- Use of inorganic nanofillers instead of conventional nanofillers for use in architectural coatings

RESEARCH SKILLS

- Proactive and creative researcher
- Experienced in working independently
- Ability to meet deadlines and accurate recording and analysis
- Knowledge of research methodologies
- Use of chem draw software
- Data and information collection
- Writing and presenting reports

EXTRA CURRICULAR ACTIVITIES

- Been an active NSS volunteer serving for a period of 2 yrs (B.Sc)
- Been an active participant of EXSP (Excellence to Science Project Programme, which aims at carrying out research work other than the academic syllabus), (B.Sc)
- State elocution winner (8^{th} rank, topic-girl child), (B.Sc)
- Participant of various literary events

ACHIEVEMENTS

- Won 1st prize in oral presentation for a National Seminar on 'Recent Advances in Chemical and Environment Research', Annamalai University, 2017
- Won 3rd prize in poster competition for "National Science Day", Annamalai University, 2016
- University Research Studentship Award (2014-2015), Annamalai University
- Won 3rd prize for essay writing competition, Department of Earth Sciences, Annamalai University, 2014
- UGC Project Fellow (2012-3mths)
- Won 1st prize in debate competition for "CYANO", Department of Chemistry, Karunya University, 2010
- Won 1st position in the event DEBATITO ENERGIA held at Karunya University, 2010
- Secured 3rd rank in Inter Elocution Competition organised by N.S.S unit of K.C. College, Mumbai, 2008
- Awarded "Mr and Mrs. S.M. D'Souza Prize", Sophia College for Women, Mumbai, 2007

WORK EXPERIENCE

Worked as a trainee research chemist at **Research & Technology, Asian Paints Ltd, Turbhe, Navi Mumbai** (**May 2011- December 2011).**

My work included the use of nanofillers (nano zinc oxide, nano silica and nano alumina) instead of the conventional fillers for use in architectural coatings. Initially, the study was carried out for polymer dispersions followed by Mill base paints.

- The mechanical properties studied as a part of this experiment are as follows:
  - ✓ Tensile elongation test
  - ✓ Scrub resistance
  - ✓ Hardness test (Koenig's)
  - ✓ Contact angles
  - ✓ Zeta potential
  - ✓ Rheology test
  - ✓ Gloss test

- ✓ Burnishing test
- ✓ Freeze thaw stability*
- ✓ Water resistance
- ✓ Alkali resistance
- ✓ Viscocity check*(*****performed only for paints)

REFERENCES

- . Dr. I. M. V. Enoch,
  Associate Professor,
  Department of Chemistry,
  Karunya University
  Coimbatore Tamilnadu
  Phone: +91-94486891717
  Email id: israelenoch@karunya.edu
- Dr. R. Parmar
  Senior Manager,
  Asian Paints Ltd (R&T),
  Turbhe, Navi Mumbai
  Phone: +91-9920449765
  Email id: randhir.parmar@asianpaints.com