

# Nattamai S. P. Bhuvanesh Ph.D.

Research Instrumentation Specialist

**Manager**, X-ray Diffraction Laboratory

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## Professional Summary

- Experienced, versatile and innovative chemist with extensive knowledge in materials synthesis, crystallography, and other characterization techniques.
- Good problem solver, proven ability to design, and apply new methods to problems of current interest.
- More than twenty two years of experience in competitive research environments with excellent written and oral communication skills.
- Ability to work as part of a team in both supervisory and participatory roles.
- Proficient in many languages including English, French, Hindi and Tamil; exceptional interpersonal skills

## Education

**Ph. D. (Solid State and Materials Chemistry), 1991-1997**

Indian Institute of Science, Bangalore, India

**M. Sc. (Chemistry) 1989-1991**

American College, Madurai, India

**B. Sc. (Chemistry) 1986-1989**

Sourashtra College (Madurai Kamaraj University), Madurai, India

## Work Experience

**Texas A&M University**, College Station, TX

2003-present

**Manager**, X-Ray Diffraction Laboratory

- Powder and single crystal diffraction specialist; Have solved several hundreds of single crystal and powder structures
- Developed novel technique for convenient data collection for powder X-ray diffraction with very small samples ( $\mu\text{g}$  to  $\text{ng}$ )
- Consultant for several industries including Bruker AXS, Inc. for diffraction needs.
- Trained users on powder and single crystal X-ray diffraction principles and applications.
- Assisted in teaching graduate level X-ray diffraction course
- Responsible for operation and maintenance, including hardware and software, of six single crystal, two powder diffractometers, and two SAXS instruments.

- Ohio State University**, Columbus, OH. Department of Chemistry 2001- 2002  
Research Associate
- Designed and installed new instrument for high temperature impedance spectroscopic analysis
  - Synthesized novel layered perovskites by *Chimie-Douce* methods and characterized from ambient and high temperature powder X-ray and neutron diffraction analysis
- University of Houston**, Houston, TX. Department of Chemistry 1999-2001  
Postdoctoral Research Fellow
- Worked in the setting up of a new solid state chemistry laboratory
  - Synthesized several novel open framework materials, and SHG active compounds and characterized by single crystal and powder X-ray diffraction
- Université du Maine**, Le Mans, France. Laboratoire des Fluorures 1997-1999  
Postdoctoral Research Associate
- Co-managed Materials Research Center's X-ray diffraction facility
  - Synthesized several members of a new family of layered perovskites
- Indian Institute of Science, Bangalore, India.** Solid State Chemistry 1991-1997  
Graduate Student (Ph.D.)
- Trained graduate students in synthesis, diffraction theory and application, materials characterization, data analyses, and presentation. Synthesized several novel materials containing  $d^0$  and  $d^1$  metal oxides

### Technical Skills

- Established knowledge in soft chemical and conventional methods for synthesis of ceramic and oxide materials
- Extensive experience in Powder and Single crystal diffraction techniques, related instrumentation, and associated software
- Expertise in normal and supercritical hydrothermal synthesis of open framework and 3-D materials
- Hands on experience in analytical techniques: Thermal methods TGA, DSC, and DTA
- Familiarity in impedance, infrared (FTIR), ultraviolet, and NMR spectroscopic techniques; NLO measurements
- Working knowledge in microscopic techniques such as scanning and transmission electron microscopy.
- Skilled in handling air-sensitive materials and vacuum devices

## Computer Skills

- Experienced in several crystallographic software for identification (EVA, JADE), structure solution (SIRware, SHELXTL, DASH, TOPAS, FOX, etc.), structure refinement (Olex2, SHELXTL, TOPAS, GSAS, FULLPROF, etc) and structure presentation (Olex2, Diamond, X-seed, X-shell, etc).
- Worked on performance and maintenance of several PC, UNIX and LINUX systems.

## Achievements and Recognitions

- **Virtual instructor** for “Practical Powder X-ray Diffraction Course”, Bruker-AXS Inc. and Conducted yearly **TOPAS Spotlight** Series workshops
- **Consultant** for leading manufacturer of X-ray diffraction instruments, Bruker-AXS Inc. for X-ray diffraction application needs.
- **Consultant** for analytical XRD applications in several pharmaceutical, petrochemical and soil industries
- **Published** more than 90 *scientific papers* in internationally recognized journals
- Co-authored and co-edited **major books** on powder diffraction
- **Invited Faculty**: American Crystallographic Association - Summer Course on Small Molecule Crystallography (Indiana University at Pennsylvania), Indiana, PA, 2004
- **Co-organizer** of the 2005 ACA workshop on Structure Solution and Refinement of difficult structures using powder diffraction
- Research Associate Fellowship, CNRS, France, 1998-1999
- Region des Pays de la Loire Fellowship, France, 1997-1998
- Sudborough Medal and Cash Price for Best Thesis Award, 1997-1998
- National predoctoral Senior Research Fellowship, CSIR, New Delhi, 1994-1996
- National predoctoral Junior Research Fellowship, Bangalore, India, 1991-1994
- Member, American Crystallographic Association, 2003-2005
- Full Member, Sigma-Xi, 2005-2006