

# Joseph Swaroop Mathen, Ph.D.

## Research Experience

### **Research Scientist**

2004 – Present

*PharmaCore, Inc., High Point, NC*

- Works with the Vice President of Chemistry to provide quotations for new projects. This includes: evaluation of project proposals from customers, estimation of price and time lines of projects and sourcing of raw materials from domestic and foreign chemical vendors 2006 – Present
- Manages and co-ordinates outsourcing of PharmaCore's projects to off-shore partners (India and China): duties include but not limited to their assignment; Request bids, Award projects, Source raw materials (US, Europe and Asia), Assess the progress of projects by reviewing weekly updates and routine conference calls, Main contact person for chemists at both ends. 2005 – Present
- Involved in custom synthesis and synthesis of various building blocks, multi-step syntheses, custom syntheses and process research and development, scales ranging from grams to kilograms. These include heterocycles, amino acids and various other building blocks. Exposure to *c*-GMP synthesis. 2004 – Present

### **Research Associate**

2002 – 2004

*Albany Molecular Research, Inc., Syracuse, NY*

Involved in multi-step synthesis of various target molecules on scales ranging from a few milligrams to multi-hundred grams as requested by customers. These include complex heterocycles, carbocycles and amino acid derivatives. Broad exposure to a variety of reactions, synthetic and analytical procedures. Additionally, involved extensively in the planning and execution of synthetic routes to targets in lab and kilo-lab. Mentored BS level personnel.

### **Senior and Junior Research Fellow**

1996 – 2001

*Regional Research Laboratory (CSIR), Organic Chemistry Division, Trivandrum, India*

*Advisor: Professor Vijay Nair, Director*

Discovered a novel multi-component reaction (MCR) involving diisopropylaminoisocyanide, DMAD and carbonyl compounds thus disclosing a novel method for synthesizing 1-amino pyrrolin-2-ones. In addition, synthesized substituted pyrazolone-*N,N*-dioxides and studied their dipolar cycloaddition reactions.

### **Research Fellow, American Cyanamid Project**

1995 – 1996

*Regional Research Laboratory (CSIR), Trivandrum, India*

*Advisor: Professor Vijay Nair, Director*

Involved in the investigation of Cerium mediated Carbon-Carbon bond formation of active methylene compounds as well as attempts towards the synthesis of NK374200.

## Education

- 2002 – **Ph.D. in Organic Chemistry (Synthesis)**, *University of Kerala, India.*  
Advisor: Professor Vijay Nair, Director, Regional Research Laboratory (CSIR), India.
- 1995 – **M.Sc. in Analytical Chemistry (First Class)**, *University of Kerala, India.*
- 1993 – **B.Sc. in Chemistry with First rank**, *University of Kerala, India.*

## **Skills**

- Multi-step synthesis of target molecules on milligram to kilogram scales; 4+ years of experience in process chemistry (lab and Kilo-Lab); eleven years of experience in organic synthesis; extensive experience in the synthesis of heterocycles, carbocycles and amino acid derivatives; exposure to *c-GMP*
- Areas of expertise include Process R&D, heterocyclic chemistry, amino acid chemistry, cycloaddition reactions, Isocyanide based multiple component reactions and Cerium mediated reactions
- Extensive experience in chromatographic methods such as column chromatography, Biotage® and HPLC; extensive exposure to spectroscopic and characterization methods such as NMR, IR, GC, MS, HPLC and ELSD.
- Supervised and mentored laboratory personnel; Project management; Manages and evaluates project outsourcing; well experienced in sourcing of raw materials. Effectively communicated results through written reports and oral presentations; good communication skills - both written and oral.
- Information retrieval from databases such as Beilstein, SciFinder and ChemACD

## **Professional Development/Training**

- 2006 – *Leadership Development Workshop* organized by Younger Chemists Committee as part of the *ACS Leaders' conference, Baltimore, MD*
- 2005 – *Heterocyclic Chemistry – Concepts, Syntheses and Applications, presented by Professor Peter Wipf*
- 2003 – *Practical Process Research and Scale-up, presented by Neal G. Anderson Ph.D.*
- 2003 – *Leadership Skills Training, presented by Grove Associates.*

## **Honors and Awards**

1. 2006; Leadership Development Award instituted by the Younger Chemists Committee (YCC) of American Chemical Society (ACS).
2. 1998 – 2001; CSIR Senior Research Fellow.
3. 1996 – 1998; CSIR Junior Research Fellow.
4. 1996 and 1995; Awarded CSIR Junior Research Fellowship through the CSIR-UGC National Eligibility Test (NET).
5. 1996; Qualified Graduate Aptitude Test in Engineering (GATE).
6. 1994; Recipient of Professor K. Saramma Endowment.
7. 1993 – 1995; Kerala University Merit Scholarship.
8. 1993 – 1995; Awarded National Merit Scholarship.
9. 1993; Recipient of N. Krishnaswamy Iyer Gold Medal instituted by the University of Kerala or standing first in the B.Sc. (Chemistry) examination.
10. 1993; First Rank holder of B.Sc. (Chemistry) examination of the University of Kerala.
11. 1986 – 1988; Recipient of Kerala State Education Department's National Scholarship.

## **Professional Affiliation**

- 2005 – Present; Member, Royal Society of Chemistry (U. K.)
- 2002 – Present; Member, American Chemical Society and Organic Chemistry Division, ACS.
- 1999 – Present; Chemical Research Society of India.

## **References**

Available upon request

## Publications and Presentations

1. "Some Items of Interest to Process R&D Chemists and Engineers" McLaughlin, M.; Garcia Rubio, S.; Tilstam, U.; Muthyala, R.; **Mathen, J. S.**; Antunes, O. A. C.; Laird, T.; Yadav, G. D.; Zlota, A. *Org. Process Res. and Dev.* **2006**, *10*, 1086-1100 (Editorial)
2. Some Items of Interest to Process R&D Chemists and Engineers" McLaughlin, M.; Rubio, S. G.; Tilstam, U.; Antunes, O. A. C.; Yadav, G.; Zlota, A.; Laird, T.; **Mathen, J. S.**; Muthyala, R.; *Org. Process Res. and Dev.* **2006**, *10*, 364-380 (Editorial)
3. Some Items of Interest to Process R&D Chemists and Engineers" McLaughlin, M.; Rubio, S. G.; Tilstam, U.; Muthyala, R.; **Mathen, J. S.**; Antunes, O. A. C.; Laird, T.; Zlota, A. *Org. Process Res. and Dev.* **2005**, *9*, 703-718 (Editorial)
4. "Some Items of Interest to Process R&D Chemists and Engineers" Laird, T.; Tilstam, U.; McLaughlin, M.; **Mathen, J. S.**; Antunes, O. A. C.; Muthyala, R. *Org. Process Res. and Dev.* **2005**, *9*, 376 (Editorial)
5. "Strategies for heterocyclic construction via novel multicomponent reactions based on isocyanides and nucleophilic carbenes" Nair, V.; Rajesh, C.; Vinod, A. U.; Bindu, S.; Sreekanth, A. R.; **Mathen, J. S.**; Balagopal, L. *Acc. Chem. Res.* **2003**, *36*, 899.
6. "[4+1] Cycloaddition reactions of *o*-Thioquinones with Isocyanides : Novel Syntheses of 2-Imino-1,3-oxathioles" Nair, V.; Mathew, B.; Vinod, A. U.; **Mathen, J. S.**; Ros, S.; Menon, R. S.; Varma, R. L.; Srinivas, R. *Synthesis* **2003**, 662.
7. "Diisopropylaminoisocyanide and DMAD in multiple component reactions (MCRs): Novel synthesis of substituted 1-amino-3-pyrrolin-2-ones by reaction with aldehydes and dicarbonyl compounds" Nair, V.; **Mathen, J. S.**; Viji, S.; Sreenivas, R.; Nandakumar, M. V.; Varma, L. *Tetrahedron* **2002**, *58*, 8113.
8. "A Facile generation of quinolone quinone methide and its [4+2] cycloaddition to pentafulvenes: Synthesis of novel pyranoquinolinone derivatives" Nair, V.; Jayan, C. N.; Treasa, P. M.; **Mathen, J. S.**; Varma, L. *Indian Journal of Chemistry* **2001**, *40B*, 1108.
9. "Aminoisocyanides in multicomponent Reactions (MCRs): A facile synthesis of substituted 3(5H)-pyrrolin-2-ones via a Dimroth rearrangement" Nair, V.; **Mathen, J. S.**; Vinod, A. U.; Varma, R. L. *Chemistry Letters* **2001**, 738.
10. "1,3-Dipolar cycloaddition reaction of nitrile N-oxides to 6-(2-phenylethyl)fulvene" Nair, V.; Nandakumar, M. V.; Maliakal, D.; **Mathen, J. S.**; Rath, N. P. *Tetrahedron* **2000**, *56*, 8001.
11. "Cerium (IV) ammonium nitrate mediated addition of ethyl acetoacetate and dimethyl malonate to indene" Nair, V.; Mathew, J.; **Mathen, J. S.** *Indian Journal of Chemistry* **1996**, *36B*, 366.
12. "Chemical electron transfer induced reaction mediated by cerium (IV) ammonium nitrate (CAN)" Kanakamma, P. P.; Mathew, J.; Nair, L. G.; Sheeba, V.; **Mathen, J. S.**; Zeena, S.; Panicker, S. B.; Nair, V. Poster presented at the *National Symposium on Emerging Trends in Organic Synthesis*, Trivandrum, November, **1996**. Abstract p-20.