

**Sunil Vishnuprasadji Sharma****Date of Birth: 8th March 1973. Nationality: Indian****School of Chemistry, Biomedical Sciences Research Complex, University of St Andrews, Fife, KY169ST**E-mail: sv4@st-andrews.ac.uk

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I am a synthetic/ medicinal chemist with an interest in synthesis of bioactive molecules and analytical tools for biochemical processes. My research interests include total synthesis of natural products, multi-step organic synthesis and development of bio-analytical methods. I am familiar pharmacophore based ligand design, SAR/QSAR analysis and bioassays using *in vitro* enzyme screenings. My experience includes synthesis design and commercialisation on multinational collaborative projects involving biologists, IP experts and marketing. I have significant experience in project/ laboratory management, supervision and training of research student, teaching and demonstrating chemistry practical to undergraduate students.

**Awards and honours**

- 2002-04: Prof. S. B. Sonawane Memorial Award for the Best Paper in Pharmaceutical Chemistry section of the Indian Journal of Pharmaceutical Education & Research (consecutive three years).
- 2000-03: Received certificates from Ministry of Health, Government of India for significant contributions in National Polio Eradication Programme (Pulse-Polio) for over 300 underprivileged children in ten villages.
- 1999: Awarded 'Best Paper' for the Oral Presentation of the abstract entitled "Preliminary Phytochemical, Anthelmintic and Antimicrobial Studies on seeds of *Melia dubia*" at 51<sup>st</sup> Indian Pharmaceutical Congress' Annual Conference, Indore, Madhya Pradesh, India.
- 1996: The Indian Pharmaceutical Association, Nilgiris Gold Medal for securing the overall First Rank in Final year M. Pharm.
- 1996: Shri Narinder Mohan Sood Gold Medal for the 'Best Outgoing Student' in M. Pharm. (Pharmaceutical Chemistry branch)
- 1996: Shri J.S.S. Mahaswami Award given by J.S.S. Mahavidyapitha, Mysore for the 'Best Outgoing Student' in M. Pharm.

**Employment Record****Research Fellow (PDRA), School of Chemistry, University of St. Andrews, Dr. R. J. M. Goss,**

Aug 2014-present

**Senior Research Associate, School of Pharmacy, University of East Anglia, Norwich, Dr. C. J. Hamilton**

May 2010-July 2014

**Post-doctoral Research Fellow, School of Chemistry, University of East Anglia, Norwich, Dr. S. P. Bew,**

June 2008-Sep 2009

**Senior Associate Tutor, School of Chemistry, University of East Anglia, Norwich.**

Jan 2004-May 2008

**Lecturer and Research Chemist (Organic & Medicinal Chemistry), Centre for Advanced Drug Research and Testing, JSS College of Pharmacy, Ooty, India.**

July 1999-Dec 2003

**Assistant Lecturer (Pharmaceutical & Organic Chemistry), VB Pharmacy College, Amravati, India (98-99), John's Pharmacy College, Bangalore, India (97-98)**

Oct 1997-June 1999

**Education****PhD (Synthetic Organic Chemistry) University of East Anglia, Norwich, Dr. S. P. Bew**

Jan 2004- April 2008 (Awarded June 2008)

Studies towards the synthesis of (S)-tyrosine based calix[4]arenes and innovative synthetic protocols towards *para-tert*-butylcalix[n]arenes using conventional and microwave methods.

**Master of Pharmacy (Pharmaceutical Chemistry) Dr. M. G. R. Medical University, Chennai, India**

1994-1996

**Bachelor of Pharmacy (Pharmaceutical Sciences), Amravati University, India**

1990-1994

**Skills and Knowledge**

- Extensive experience in organic synthesis via multi-step and convergent routes, parallel synthesis, microwave-assisted organic reactions and biotransformations. Experience in natural product synthesis, amino acid, carbohydrate and heterocyclic chemistry.
- Extensive experience in using NMR, RP/chiral HPLC, FT-IR, UV-Vis, fluorimetry, LC-MS, automated chromatography instruments, ion exchange chromatography, microwave reactors, high pressure hydrogenation and determination of physico-chemical properties.

**Research Presentations (\*Oral: 8, Poster: 7)**

1. Chemical and chemoenzymatic syntheses of bacillithiol: An unusual thiol cofactor in *B. anthracis*, *S. aureus* and related pathogens, European Symposium of Organic Chemistry (ESOC-2011), Crete, Greece, 2011.
2. Total synthesis of bacillithiol: An unusual cofactor in *B. anthracis*, *B. cereus*, *S. aureus* and other Low G+C Gram positive bacterial pathogens, RSC Carbohydrate and Bio-organic Subject Group Meeting, King's College, London, 2011.
3. Development of novel bioactive molecules using the calix[4]arene scaffold, Bio-organic Chemistry Conference for Graduate Students, Manchester, 2007.
4. Development of novel bioactive molecules using the calix[4]arene scaffold, Medicinal Chemistry Symposium, Pfizer, Sandwich, 2007.
5. \*Improved synthesis of 2,6-bis-(substituted quinoline-3-yl-methylene) cyclohexanones under microwave irradiation, 8<sup>th</sup> APTI Annual National Convention, Hubli, India, 2003.
6. \*CoMFA: A Modern Tool for Rational Drug Design, 8<sup>th</sup> APTI Annual National Convention, Hubli, India, 2003.
7. \*Use of microwave for rapid and eco-friendly synthesis of organic molecules, 54<sup>th</sup> Indian Pharmaceutical Congress' Annual Conference (IPC), Pune, India, 2002.
8. Rapid and effective synthesis of 4-methyl-7-hydroxy coumarins under microwave irradiation, 54<sup>th</sup> IPC, Pune, India, 2002.
9. \*Development of quinazolinonyl- $\beta$ -diketones as potential antiangiogenic, antitumor and antimicrobial agents, 54<sup>th</sup> IPC, Pune, India, 2002.
10. \*QSAR studies on substituted bis-(acridine-4-carboxamides) as novel anticancer agents, 53<sup>rd</sup> IPC, New Delhi, India, 2001.
11. \*Synthesis of novel quinazolinonyl- $\beta$ -diketones as angiogenesis inhibitors, 53<sup>rd</sup> IPC, New Delhi, India, 2001.
12. Development of quinazolinonyl  $\beta$ -diketones as possible antitumor agents, FIP Congress, Vienna, Austria 2000.
13. Development of imidazoliny-triazenes as possible antitumor agents, 52<sup>nd</sup> IPC, Hyderabad, India, 2000.
14. \*Problem-based learning: applications in medicinal chemistry, 52<sup>nd</sup> IPC, Hyderabad, India, 2000.
15. \*Preliminary phytochemical and antimicrobial studies on seeds of *Melia dubia*, 51<sup>st</sup> Indian Pharmaceutical Congress' Annual Conference (IPC), India, 1999.  
(Best Paper Award for Oral Presentation in Natural Products section).

**Funding Awarded**

- 2009: Awarded UEA research travel grant and Pfizer grant for conference presentations.
- 2004: Awarded UEA and the School of Chemical Sciences & Pharmacy fellowships; received full funding for doctoral research (2004-2007).
- 2000-03 Received four financial grants (total INR 140K) for the Post-Graduate research projects from Council for Scientific and Industrial Research (CSIR), India and Tamilnadu Pharmaceutical Sciences Welfare Trust (TNPSWT), India during 2000-2003.

## **Administrative Experience/ Teaching**

### Lab Roles:

- Experience in lab management, training of MSc level chemists (UEA) and supervision of fifteen project students (JSS, 1999-2003) involving detailed proposals of research plans, experiment set-up and meticulous follow-up of research progress and assessments.
- Joint coordinator for All India Council for Technical Education sponsored Quality Improvement Programs for pharmacy teachers during 2000 to 2003. Actively involved in planning the week long events for groups of 25-30 participants, designed course contents and lead resource management; delivered lectures/demonstrations on microwave-assisted synthesis and molecular modelling.

### Demonstrating:

- Worked as an associate tutor (AT), demonstrated organic chemistry practical to UG students.
- Taught pharmaceutical chemistry courses to B.Pharm. students, designed and supervised research projects for master's students.

### Grant writing

- Co-authored successful grant applications (as a named researcher) from Leverhulm trust (Methods for analysing "invisible" cellular disulfides, 2012-14) and Proof of Concept funding from UEA-REN (Scale-up preparation and distribution of Bacillithiol, June-July 11).

## **Selected Publications**

1. Biophysical features of bacillithiol, the glutathione surrogate of bacillus subtilis and other firmicutes; S. V. Sharma, M. Arbach, A.A. Roberts, C.J. Macdonald, M. Groom, C.J. Hamilton\*, *ChemBioChem* 2013, 14(16):2160-2168.
2. Mechanistic studies of FosB: a divalent metal-dependent bacillithiol-S-transferase that mediates fosfomycin resistance in *Staphylococcus aureus*; A.A. Roberts, S.V. Sharma, A.W. Strankman, S.R. Duran, M. Rawat, C.J. Hamilton\*, *Biochem. J.*, 2013, 451(1):69-79.
3. Cross-functionalities of Bacillus deacetylases involved in bacillithiol biosynthesis and bacillithiol-S-conjugate detoxification pathways; Z. Fang, A.A. Roberts, K. Weidman, S.V. Sharma, A. Claiborne, C.J. Hamilton, P.C. Dos Santos\*, *Biochem. J.*, 2013, 454(2):239-247.
4. Chemical and chemoenzymatic syntheses of bacillithiol: A unique low molecular weight thiol amongst low G+C Gram-positive bacteria; S.V. Sharma, V.K. Jothivasan, G.L. Newton, H. Upton, J.I. Wakabayashi, M.G. Kane, M. Rawat, A.A. Roberts, J.J. La Clair and C.J. Hamilton\*, *Angew. Chem. Int. Edn.*, 2011, 50(31), 7101-7104.
5. Do commercially available metal salts mediate calixarene formation via hydrogen-bonded dimers? S. P. Bew\* and S. V. Sharma, *J. Org. Chem.*, 2011, 76(17), 7076-7083. (Highlighted as Controlling Calixarene Size with Metal Salts: The First Brønsted-Free Synthesis, *Synfacts*, 2011, 11, 1188)
6. Mass spectroscopic investigation of bis-1,3-urea calix[4]arenes and their ability to complex N-protected  $\alpha$ -amino acids; S.P. Bew\*, A.W.J. Barter, and S.V. Sharma, *J. Incl. Phenom. & Macrocycl. Chem.*, 2010, 66, 195-208.
7. Hybrid calix[4]arenes via ionic hydrogenation and transition-metal mediated processes; S.P. Bew\*, R. Brimage, G. Hiatt-Gipson, S.V. Sharma. and S. Thurston, *Org. Lett.*, 2009, 11(12), 2483-2486.
8. Upper-rim appended hybrid calix[4]arenes via Click chemistry; S.P. Bew\*, N. L'Hermite, R. Brimage and S.V. Sharma, *Org. Lett.*, 2007, 9(19) 3713-3716.
9. An expedient one-pot chemoselective synthesis of *para-tert*-butylcalix[8]- and [9]arene; S.P. Bew\* and S.V. Sharma, *Chem. Comm.*, 2007, 9, 975-977.
10.  $\alpha$ -Amino acid Tröger base derivatives, possible conformationally restricted scaffolds?; S.P. Bew\*, L. Legentil, V. Scholier and S.V. Sharma, *Chem. Comm.*, 2007, 4, 389-391.

### Book Chapter

Microwave Technology: A Step Towards Green Chemistry, Sunil V. Sharma and Shrishailappa Badami, in *Chemistry For Green Environment*, Srivastava, M. M., Sanghi, Rashmi (Edn), Narosa Pub House Published 2005/07; US-ISBN:8173196206