

# Dr. Narayan P. Firke, Ph.D.

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## Present position

- Associate Professor, Department of Chemistry, Fergusson College (Autonomous), Pune.

## Contact Details



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## Work Experience

Teaching: 17 years

Research/Industrial: 12 years

## Personal Profile

"I'm a passionate associate professor with over seventeen years of experience, I have taught organic, analytical and industrial chemistry at the undergraduate level and core subjects in organic chemistry at the postgraduate level for over nine years. I completed my PhD in Organic chemistry and authored sixteen national and international research articles."

## Course(s) Taught

1. Organic Chemistry
2. Analytical Chemistry
3. Industrial Chemistry
4. Chemistry Practical all classes
5. Reaction Mechanism
6. Organic Spectroscopy

## Field of Specialization/Areas of Interests

- Organic Chemistry
- Natural Products
- Medicinal Chemistry
- Chemical Education
- Phytochemistry

## Education

- Ph.D. – (Chemistry): from 2011 to 2016

Title of the Thesis: "Synthesis of Betulinan C and Farinomalein and their Synergetic Bioactivity with Eugenol Isolated from *Ocimum tenuiflorum* L.".

Fergusson College, Savitribai Phule Pune University, Pune

**Year of Award: 2016**

- **Master of Science- (Organic Chemistry): 2002**  
Department of Chemistry, University of Pune, Ganeshkhind Pune 07
- **Bachelor of Science- (Chemistry): 2002**  
A.C.S. College Akurdi, Pune University, Pune

### **Fellowship/Awards/Certificate/Achievements/Recognitions**

- **NET (LS) December 2002**
- **NET (LS) June 2004**
- **M. Phil. Guide Recognition**
- **PG Recognition**
- **17 Research papers till date**
- **Member of College Mentoring Team**
- **Mentored 12 students for M. Sc. Projects**
- **Organized Workshops and Seminars**
- **Member of Purchase committee**
- **Founder of online quiz “Organic Chemistry Olympiad” for chemistry learners, which later objectively turned into OCO - NET, SET, GATE, GRE Practice Module 21<sup>st</sup> October 2017- March 2018.**
- **YouTube channel <https://www.youtube.com/channel/UClw4g7nfQ4Pu7aJioYhnu6g>**

### **Member of College Committees/ Professional Bodies and Others**

<b>College Level</b>	<b>Others</b>
➤ Member of Examination Committee	BoS Member for Organic, Analytical Chemistry at FY, SY, and TYBSc Fergusson college Autonomous from 2016
➤ BoS member	
➤ Member of Mentoring Committee	Paper setter and Examiner for M.Sc. Biochemistry at affiliated colleges of Savitribai Phule Pune University, Pune
➤ Member of Examination Time-Table Committee	External examiner for End semester practical examinations for M.Sc. Biochemistry at affiliated colleges of Savitribai Phule Pune University, Pune

## Employment History

**1) Organization : Sudarshan Chemicals Industries Ltd**

**Role : Scientific Officer**

**Duration : May 2004 to May 2005**

<b>Responsibilities</b>	➤ Developing <b>Specialty Chemicals</b> using Organic Synthetic Methods and establishing them with modern methods of analysis
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**2) Organization : National Chemical Laboratories, Pashan, Pune 08 India**

**Role : Project Assistant (JRF)**

**Duration : Jan 2004 to April 2004**

<b>Responsibilities</b>	➤ Developing of Polymer for Fuel Cell Applications.
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**3) Organization : Department of Chemistry University of Pune**

**Role : Project Assistant (JRF)**

**Duration : July 2002 to May 2003**

<b>Responsibilities</b>	➤ Spectroscopic and thermal studies on the interaction of nitro compounds on organic functional groups.
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## Research Projects

Title of the Project	Name of Funding Agency	Amount (Rs)	Duration (Year) (From To)	Type (Minor/Major)	Outcome
Synthesis of 1,2- <i>O</i> -isopropylidene-3-aminomethyl-5,6- <i>O</i> -isopropylidene-D-Glucofuranose and it's derivative as chiral auxillary for asymmetric synthesis	UGC	60,000/-	2008-2010	Minor	Succeed in preparation of some of the moieties towards 1,2- <i>O</i> -isopropylidene-3-aminomethyl-5,6- <i>O</i> -isopropylidene-D-Glucofuranose and it's derivative as chiral auxillary for asymmetric synthesis.
Development of Method for Phytochemical analysis of <i>Ocimum Sanctum</i>	BCUD Board of University and College Development (BCUD)	2,10,000/-	2012-2014	Minor	Surrendered

## Research Publications in National and International Journals

1. Markandeya, A.G., **Firke, N.P.** and Pingale, S.S.\*. TLC analyzer: an inexpensive tool for analysis of astronomical images. *Elixir Appl. Chem.* 2011; 39: 5087-5089.
2. Pingale, S.S.\*, Sunita Salunke-Gawali, Markandeya, A.G. and **Firke, N.P.** Recent development in research of *Celocia argentea*: A review, *J. Pharm. Res.* 2012; 5(2): 1076-1082.
3. Pingale, S.S.\*, **Firke, N.P.** and Markandeya, A.G. Therapeutic activities of *Ocimum tenuiflorum* accounted in last decade: A review. *J. Pharm. Res.* 2012; 5(4): 2215-2220.
4. Markandeya, A.G., **Firke, N.P.**, Pingale, S.S., Salunke-Gawali S.S.\* Quantitative elemental analysis of *Celocia argentea* leaves by ICP-OES technique using various digestion methods. *Int. J. Chem. Anal. Sci.* 2013; 4: 175-181.
5. Markandeya, A.G., **Firke, N.P.**, Gore S.S., Pingale, S.S., Salunke-Gawali, S.S. Antibacterial activity of *Celocia argentea* leaves extract against *Staphylococcus aureus*. *Environ. Obs.* 2013; 13:123-124.
6. Markandeya, A.G., **Firke, N.P.**, Suneeti S. Gore, Salunke-Gawali S.S. and Pingale, S.S.\* Antibacterial activity of *Celocia argentea* leaves extract in organic solvents. *Res. J. Pharmacol. Pharmacodyn.* 2014; 6(2): 79-81.
7. **Firke, N.P.**, Markandeya, A.G., Konde Deshmukh, R.S., Pingale, S.S. Synthesis and Bio-Film Inhibition Activity of Betulinan C and its Analogs. *Res. J. Pharm. Tech.* 2014; 8(1): 54-58.
8. **Firke, N.P.\***; Markandeya, A.G., Konde Deshmukh, R.S., Pingale, S.S. Plausible Reaction Path for Haval-Argade Rearrangement in Synthesis of Farinomalein. *Asian J. Chem.* 2018; 30(4): 901-903.
9. **Firke, N.P.\***; Markandeya, A.G., Konde Deshmukh, R.S., Pingale, S.S. Synthesis and Antibacterial Activity of Farinomalein and its Analogues. *Asian J. Med. Org. Chem.* 2018; 3(1): 10-13.
10. **Firke, N.P.\***; Markandeya, A.G., Konde Deshmukh, R.S., Pingale, S.S. Tripeptides Observed in Hydro-distillation Analysis of *Ocimum Tenuiflorum L.* by LC-MS/MS. *Int. J. Chem. Phys. Sci.* 2018; 7(2): 46-51.
11. **Firke, N.P.\***; Markandeya, A.G., Konde Deshmukh, R.S., Pingale, S.S., Observations on fragmentation pathway of farinomalein and its isomers by structural investigation using LC-MS/MS. *Mass Spectrom. Lett.* 2018; 9(1): 37-40.
12. Markandeya, A.G., **Firke, N.P.**, Nitin V. Ganjave; Salunke-Gawali, S.A., R. Mahale; Pingale, S.S.\*, Steroids from *Celocia argentea* Leaves by LC-MS. *J. Chem. Phy. Sci.* 2018; 7: 1-6.
13. **Firke, N.P.\***; Pingale, S.S., Salunke-Gawali, S.A., Markandeya, A.G., Ceramide from *Celocia argentea* Leaves by LC-MS. *Inter. J. Sci. Eng.* 2018; A3: 155-160.

14. **Narayan Firke**; Vaibhavi Gulavani, V.; Sapkal R.; Sagdeo, P.R.; Yengantiwar, A.\*, Plug and Play Electrodeposition Cell: A Case Study of Bismuth Ferrite Thin Films for Photoelectrochemical Water Splitting *ECS J. Solid State Sci. Technol.*, 2022; 11, 013006.
15. **Firke, N.P.\*** The Plausible Research Strategies and Tools for Organic Chemists in the Hibernating Stage of Their Pre-PhD. *Journal of Higher Education Theory and Practice*, 2022; 22(1): 189-193.
16. **Firke, N.P.\*** A concise review on synthesis of acetal and recent advances. *YMER*, 2022; 21(8): 33-46.
17. **Firke, N.P.\***, Borade, N.A. An explicit application of Google form in chemistry viva-voce examination. *YMER*, 2022; 21(10); 308-327.
18. **Firke, N.P.\*** Google Form Assisted Pre-Laboratory Intro and Assessment of Organic Qualitative Analysis Practical. *High. Educ. Future*, 2022. (Communicated).

#### **Participation in Conferences/Seminars/Symposia/Workshop:**

1. **Narayan P. Firke**, Therapeutic activities of *Ocimum tenuiflorum* accounted in last decade: A review, National Seminar “**Recent trends in chemical and Environmental Sciences (RASES-2012)**”, **PDEA’s Prof. Ramakrishna More ACS College, Akurdi, Pune 44, February 2012**
2. **Narayan P. Firke**, Practical aspects of organic chemistry synchronized with green chemistry, National Seminar “**Role of Green Chemistry in Environmental Pollution (ROGCIEP-2012)**”, **Anand Charitable Sanstha Ashti’s Anandrao Dhonde Alias Babaji Arts, Commerce and Science College, Kada, 414 202, December 2012.**
3. **Narayan P. Firke**, Anil G. Markandeya, Synthesis of bio-available silver nanoparticles from *Celocia argentea* leaves extract, National Seminar, “**Recent Trends in Chemical and Material Science (RTCMS-2013)**” **Bharti Vidhyapeeth Yashwantrao Mohite College, January 2013.**
4. Anil G. Markandeya, **Narayan P. Firke**, Shirish S. Pingale, Sunita A. Salunke-Gawali\*, “Trace elemental analysis of *Celocia argentea* (cock comb)”, **CRSI Zonal Meet, National Chemical Laboratory, Pune-08) May 2011.**
5. Anil G. Markandeya, **Narayan P. Firke**, Tanaji S. Kadam and Shirish S. Pingale. Synthesis of bio-available silver nano-particles from the *Celocia argentea* leaves extract. National Seminar “**Recent trends in chemical and material sciences**”, **YM College, Pune, Jan-2013.**
6. **Narayan P. Firke**, Anil G. Markandeya, Rajendra S. Konde Deshmukh and Shirish S. Pingale. Virtual screening of eugenol 1,2,3-triazole derivatives for their biological activity by molinspiration. National Conference “**Drug Design and Discovery**”, **Devchand College, Nipani, September 2013**
7. **Narayan P. Firke**, Chetan V. Khachane, Anil G. Markandeya, “Eugenol Derivatives: A Rational Approach in Computer-Assisted Drug Discovery, International Conference “**Drug Design and Discovery**”, **Indian institute of Science September 2013.**

8. Anil G. Markandeya, **Narayan P. Firke**, Suneeti S. Gore, Sunita Salunke-Gawali and Shirish Pingale. Hydrodistillation and identification of novel compounds from Celocia argentea leaves by GC-MS. National Conference “**Modern Analytical Techniques in Microbiology**”, Fergusson College, **January 2014**.
9. Anil G. Markandeya, **Narayan P. Firke**, Sunita Salunke-Gawali and Shirish Pingale. Phytochemical Analysis of Celocia argentea leaves by LC-MS. International Conference “**Recent Trends and Challenges in Science and Technology**” Padmashri Vikhe Patil College of Arts, Commerce and Science, Pravaranagar, **August 2014**.
10. Anil G. Markandeya, **Narayan P. Firke**, Sunita Salunke-Gawali and Shirish Pingale. Flavonoids and Lipids form Celocia argentea by LC-MS. National Conference “**Advances in Chemical Sciences with Special Reference to Molecular Spectroscopy and Organic Electronic**” Fergusson College, Pune, **December 2014**.
11. Narayan P. Firke. Computer Assisted Crossword Creator Access 1.0 as Educational Instrument, International Conference “**Innovations in Teaching Learning and Evaluation in Higher Education**”, Modern College, Pune, **January 2016**.

<b>Events Organized/Coordinated:</b>
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Sr. No	Name of the Event	Name of organizing Institute/ College/ University	Nature of contribution	Dates
1.	<b>AVISHKAR-2010</b> zonal level Research Project Competition	Fergusson College, Pune	Organizer member	6 <sup>th</sup> and 7 <sup>th</sup> December 2010.
2.	<b>Seminar on HPLC and LC-MS technique</b> ; Speaker: Dr. Ajit Srivastava Vice President, (Bio-Tech and Life Sciences Group) and Mr. Anup Phadake	Fergusson College, Pune	Organizer member	22 <sup>nd</sup> February 2012
3.	Workshop on ‘ <b>Capacity Building Workshop</b> ’ for UG and PG Students(Arts and Science) Communication Skills Speaker: Riddhi Sanghvi; Interview Skills Speaker: Renuka Panchpor; Corporate Etiquettes Speaker: Riddhi Sanghvi;	Fergusson College, Autonomous, Pune	Organizer member	25 <sup>th</sup> August 2021 to 27 <sup>th</sup> August 2021

## **Additional skills/Activities**

### **Worked as a Recourse Person:**

1. Worked as recourse person on 05<sup>th</sup> February 2011 at Department of Microbiology, Fergusson college, workshop M. Sc. Part-I student. Topic: “Analytical Techniques in Chemistry”; followed by Practical demonstration of FT-IR, HPLC, GC, AAS.
2. Worked as recourse person on 08-09<sup>th</sup> October 2012 at Department of Environment Science, Fergusson College, workshop M. Sc. Part-I and II student. Topic: “Gas Chromatography and HPLC instrumentation”; followed by Practical demonstration of HPLC, GC
3. Worked as recourse person on 20th April 2022 at Department of Chemistry, Fergusson College, workshop M. Sc. Part-I and II student. Topic: “SET/NET Preparation Workshop”.

### **Worked as an Expert in Panel:**

1. Worked as an expert on the interview panel of NNT (Nurturing & Nourishing Talent) program of PICC (Pune Inter College Consortium) on 25<sup>th</sup> January, 2011.

### **Professional Training Attended:**

1. Training Course Topic: Laboratory Management & Internal Audit As Per ISO/IEC 17025:2017; Organized by: Deccan Education Society in Association with Kulkarni Laboratory & Quality Management Services S. P. College, Pune; Venue: Department of Chemistry, S. P. College, Pune; Duration: 17<sup>th</sup> December to 20th October 2019

### **Patent Published:**

1. **Narayan P. Firke**; A system for analyzing a thin layer chromatographic substrate. Indian Patent Published, Date of Application: 31/10/2017; Date of Published: 03/05/2019; Application Number: 201721038774 (**Not granted**)

### **Orientation Course, Refresher Courses and Short-term Program completed with A Grades:**

1. **Refresher Course in Chemistry** at UGC Academic Staff College, University of Pune. Grade: ‘A’ Duration: 24<sup>th</sup> November 2008 to 14<sup>th</sup> December 2008. Sponsored by: UGC, New Delhi.
2. **Orientation Course in Chemistry** at UGC Academic Staff College, University of Pune. Grade: ‘A’ Duration: 26<sup>th</sup> July 2010 to 22<sup>nd</sup> August 2010. Sponsored by: UGC, New Delhi
3. **Refresher Course in Chemistry** at Department of Chemistry, Shivaji University. Grade: ‘A’ Duration: 16<sup>th</sup> November 2015 to 6<sup>th</sup> December 2016. Sponsored by: UGC, New Delhi
4. **Short Term Program in Research Methodology (Chemistry)**, Savitribai Phule Pune University, Pune Duration: 14<sup>th</sup> January 2018 to 20<sup>th</sup> January 2018. Sponsored by: UGC, New Delhi.
5. **Short Term Program in e-Content development (Chemistry)**, Savitribai Phule Pune University, Pune Duration: 04<sup>th</sup> February 2019 to 10<sup>th</sup> February 2019. Sponsored by: Pandit Madan Mohan Dalviya National Mission On teachers and Teaching.

### **Professional Training Attended:**

1. Training Course Topic: Laboratory Management & Internal Audit as Per ISO/IEC 17025:2017; Organized by: Deccan Education Society in Association with Kulkarni Laboratory & Quality

<b>Course Content Developed (e-content)</b>
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**YouTube Channel: Dr Narayan Firke (138 Subscribers)**

<https://www.youtube.com/channel/UCIw4g7nfQ4Pu7aJioYhnu6g>

1. Organic qualitative analysis. <https://youtu.be/yotuEbX0E3c>
2. How to solve chemistry theory papers. [https://youtu.be/Tpw\\_3Izhvi0](https://youtu.be/Tpw_3Izhvi0)
3. Stereochemistry problem-solving. <https://youtu.be/qo5XX67kMJg>
4. How to construct a formula for optical activity. <https://youtu.be/bX4o6ykWc38>
5. Optical activity numerical, 1-minute problem. <https://youtu.be/hhOWh1j4TqU>
6. Drugs on COVID-19 <https://www.youtube.com/watch?v=8lopeWQRPM8>
7. UV Torch Against COVID-19 <https://www.youtube.com/watch?v=1-kdtN3a02M>

**Ancillary Materials: Developed Online Learning Applications and Modules:**

1. Laboratory Chemical Label Creating application **Chem Info Access Version 1.0** using *Access 2007*
2. Acid-Base Titration (pH metry) Graph plotter using *Excel 2007*.  
<https://drive.google.com/file/d/1Fo43bvy1FAT6k7noSSm5zu2Nl5W8pWd8/view?usp=sharing>
3. Analytical Chemistry Module <http://willingdoncollege.in/Chemistry.aspx>
4. Conductometry Module <http://willingdoncollege.in/Chemistry.aspx>
5. Inorganic Qualitative Analysis Module <http://willingdoncollege.in/Chemistry.aspx>
6. Inorganic Qualitative Transition Elements Module <http://willingdoncollege.in/Chemistry.aspx>
7. F. B. Sc. Journal Writing (Specimen) Module <http://willingdoncollege.in/Chemistry.aspx>
8. S. B. Sc. Journal Writing (Specimen) Module <http://willingdoncollege.in/Chemistry.aspx>
9. Module 1: Viva questions bank CHE1103 <https://forms.gle/AC8FJpSeeomQYXv38>
10. Module 2: Viva questions bank CHE3509 <https://forms.gle/QM4LHtzsVcfJc37N9>