

Curriculum Vitae

Dr. Praveen Devangad

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Current Role : Assistant Professor in Maratha Mandal Engineering College, Belagavi, India

I am an experienced professional, having worked in teaching, research, and as an industry consultant. I have worked as a lecturer at various levels, from junior college to postgraduate level. Besides my teaching experience, during my PhD, I gained 5 years of hands-on experience of operating high-power Nd:YAG nanosecond pulsed lasers for material characterization. Skills like the handling of optics for laser spectroscopy, data analysis, and scientific communication are my strengths. Industry consulting work involved the interpretation of data obtained from near-infrared spectroscopy of dairy products using machine learning methods. I have fairly good knowledge of programming in R to interpret the spectroscopic data. I have explored various machine learning methods for the classification and quantification of materials during my research. Methods like PCA, PLS-DA, SVM, logistic regression, and Random Forest were widely employed in my work.

Education

Ph.D. Physics (Awarded 24th February 2018)

Dept. of Atomic and Molecular Physics, Manipal Academy of Higher Education, Manipal, Karnataka

Thesis title: *Chemometrics based approaches for laserinduced plasma spectroscopy: Analysis of glass samples for elemental quantification and classification*

M.Sc. Physics (2007-2009) - First Class

Dept. of Physics, Karnataka University Dharwad

B.Sc. (2004-2007)- Second Class

G.S.Sc. College Belagavi, Karnataka

Experience

Industry (R&D) : 1 year

Associate Scientist at Infiniti Agrotech LLP

Panaji, Goa from 2021 to 2022

Teaching : 5 Years

Atomic and Molecular Physics, Laser Spectroscopy

Multivariate Analysis/Machine Learning/Data Science

Skills: R Programming for Data Science

Research Interests

Awards

Young Scientist, SERB, Govt. of India international travel grant for the paper presentation in EMSLIBS- 2017 held in Pisa, Italy

**Number of publications
(International)**

9

**Number of conference
presentations**

6



	All	Since 2018
Citations	114	81
h-index	5	5
i10-index	3	3

List of Publications (International):

1. Yogesha, M., Venkatramanan G. Rao, **Praveen Devangad**, Jacinta S. D'Souza, and Santhosh Chidangil. "A chemometric study combined with spectroscopy for the quantification of secondary structure of flagellar-associated protein 174 (FAP174)." *Journal of Chemometrics*, e3221, (2020): **WILEY**
2. **Praveen Devangad**, M. M. Tamboli, K. M. Muhammed Shameem, Rajesh Nayak, Ajeetkumar Patil, V.K. Unnikrishnan, C. Santhosh, G.A. Kumar, "Spectroscopic identification of rare earth elements in phosphate glass", *Laser Physics*, **28** (1), 015703, (2017) **INSTITUTE OF PHYSICS**
3. M. M. Tamboli, V. K. Unnikrishnan, **Praveen Devangad**, K. M. Muhammed Shameem & Santhosh, C. (2017, June), "ST-LIBS for heavy element detection in complex matrices", In Fifth International Conference on Optical and Photonics Engineering (pp. 104492T-104492T). International Society for Optics and Photonics. [*Scopus Indexed*] **SPIE**
4. Muhammed Shameem K. M, M. M. Tamboli, **Praveen Devangad**, Unnikrishnan V. K, Sajan D. George, V. B. Kartha, and Santhosh C, "Conventional and standoff pulsed laser-Raman-echelle- time-gated (PRET) system," *Journal of Raman Spectroscopy* **48** (6), 785-788 (2017). **WILEY**
5. M. M. Tamboli, V. K. Unnikrishnan, R. Nayak, **Praveen Devangad**, K. M. Muhammed Shameem, V. B. Kartha, and C. Santhosh, "Development of a Stand-off Laser Induced Breakdown Spectroscopy (ST-LIBS) system for the analysis of complex matrices," *Journal of Instrumentation* **11** (08), P08021 (2016). **INSTITUTE OF PHYSICS**
6. **Praveen Devangad**, V. K. Unnikrishnan, M. M. Tamboli, K. M. Muhammed Shameem, Rajesh Nayak, K. S. Choudhari, and C. Santhosh, "Quantification of Mn in glass matrices using laser induced breakdown spectroscopy (LIBS) combined with chemometric approaches," *Analytical Methods* **8** (39), 7177-7184 (2016). **ROYAL SOCIETY OF CHEMISTRY**

7. **Praveen Devangad**, V. K. Unnikrishnan, Rajesh Nayak, M. M. Tamboli, K. M. Muhammed Shameem, C. Santhosh, G. A. Kumar, and D. K. Sardar, "Performance evaluation of Laser Induced Breakdown Spectroscopy (LIBS) for quantitative analysis of rare earth elements in phosphate glasses," *Optical Materials* **52**, 32-37 (2016). **ELSEVIER**
8. V. K. Unnikrishnan, Rajesh Nayak, **Praveen Devangad**, M. M. Tamboli, C. Santhosh, G. A. Kumar, and D. K. Sardar, "Calibration based laser-induced breakdown spectroscopy (LIBS) for quantitative analysis of doped rare earth elements in phosphors," *Materials Letters* **107**, 322-324 (2013). **ELSEVIER**
9. **Praveen Devangad**, Unnikrishnan V. K, Yogesha M., Suresh D. Kulkarni and Santhosh C. LIBS + Chemometrics: An ideal approach for the spectrochemical analysis of iron phosphate glass samples", *Journal of Chemometrics* **34(11)**, e331(2020), **WILEY**

Conference Proceedings:

Vanessa Rodrigues, **Praveen Devangad**, Surekha Barkur, Santhosh Chidangil, Hema Ramachandran, and Deepak Mathur, "Zone Plate Fabrication Using a Low Power Femtosecond Laser" *Advanced Science Letters* **23** (03), 1745-1748 (2017).

Oral Presentations at National/ International Events:

1. **Praveen Devangad**, V.K. Unnikrishnan, M. Yogesha, M. M. Tamboli, K. M. Muhammed Shameem and C. Santhosh "Support vector machines for the classification and quantification of borosilicate glass samples using Laser Induced Breakdown Spectroscopy (LIBS)" Presented in Euro-Mediterranean Symposium on LIBS, **Pisa, Italy**, 11-16 June 2017".
2. UGC sponsored two day National Seminar on "Frontiers in Photonics" on 13 and 14 December, 2013 at MGM College, **Udupi, Karnataka, India**

Posters presented at National / International Conferences

1. V. K. Unnikrishnan, Rajesh Nayak, **Praveen Devangad**, M. K. Dinoop, V. B. Kartha, B. M. Suri and C. Santhosh, "Biomedical Applications of Laser-Induced Breakdown Spectroscopy (LIBS): a preliminary study", International Conference on Biomedical Engineering, **Manipal**, 2011.
2. **Praveen Devangad**, M. M. Tamboli, V. K. Unnikrishnan, C. Santhosh, "Laser Induced Plasma Spectroscopy of Glass Sample", presented at *Topical Conference on Atomic Processes in Plasmas (ISAMP-TC2013)*, held at Institute of Plasma Research, **Gandhinagar, Gujarat** during 18th-20th of November, 2013.
3. **Praveen Devangad**, M. M. Tamboli, V.K. Unnikrishnan, C. Santhosh, "Optimization of a Laser Induced Breakdown Spectroscopy (LIBS) Setup for the Elemental Analysis of Glass Sample", presented at the DAE-BRNS National Laser Symposium (NLS-22), held at Manipal University, **Manipal, Karnataka** January 8th-11th, 2014.
4. Unnikrishnan V.K., Rajesh Nayak, **Praveen Devangad**, M. M. Tamboli and Santhosh C., "Laser-Induced Breakdown Spectroscopy (LIBS) for quantitative analysis of rare earth elements in (La1-XNdY)2O2S series samples" held at DAE-BRNS National Laser Symposium (NLS-22), Manipal University, **Manipal, Karnataka** January 8th-11th, 2014.

5. **Praveen Devangad**, V.K. Unnikrishnan, M.M. Tamboli, Muhammed Shameem K. M., Ajeethkumar Patil, C. Santhosh, G.A.Kumar and D.K. Sardar, "Laser Spectroscopic Studies of Praseodymium (Pr³⁺) doped Phosphate Glass", DAE-BRNS 'National Laser Symposium-23' held at Sri Venkateswara University, **Tirupati** during 03-06 December 2014.
6. M. M. Tamboli, V. K. Unnikrishnan, **Praveen Devangad**, K. M. Muhammed Shameem and C. Santhosh "Stand-off Laser Induced Breakdown Spectroscopy: A Comparative study using telescopic arrangements", DAE-BRNS 'National Laser Symposium-23' held at Sri Venkateswara University, **Tirupati** during 03-06 December 2014.
7. K. M. Muhammed Shameem, Arun Chawla, Aseefhali Bankapur, M. M. Tamboli, **Praveen Devangad**, Unnikrishnan V. K. and Santhosh C., "LIBS-Raman technique for identification of Kidney stones: A pilot study" organized by DAE-BRNS National Laser Symposium (NLS-23), SV University, **Tirupati** during 03-06 December 2014.
8. **Praveen Devangad**, V. K. Unnikrishnan, M. M. Tamboli, K. M. Muhammed Shameem and C. Santhosh "Classification of Manganese doped Glasses by Laser Induced Breakdown Spectroscopy coupled with Principal Component Analysis (PCA)" presented at DAE-BRNS National Laser Symposium (NLS-24), held at RRCAT, **Indore**, during 02-05 December 2015.
9. M. M. Tamboli, V. K. Unnikrishnan, **Praveen Devangad**, K. M. Muhammed Shameem and C. Santhosh "Stand-off Laser Induced Breakdown Spectroscopy for quantitative analysis of heavy metals in soil" presented at DAE-BRNS National Laser Symposium (NLS-24), held at RRCAT, **Indore**, during 02-05 December 2015.
10. K. M. Muhammed Shameem, V. K. Unnikrishnan, M. M. Tamboli, **Praveen Devangad**, Sajan D George and C. Santhosh "Combined LIBS Raman system using a non-gated detector for material characterization" presented at DAE-BRNS National Laser Symposium (NLS-24), held at RRCAT, **Indore**, during 02-05 December 2015.
11. **Praveen Devangad**, V.K. Unnikrishnan, M.M. Tamboli, Muhammed Shameem K. M., Ajeethkumar Patil, C. Santhosh, G.A.Kumar and D. K. Sardar, "Absorption, fluorescence and LIBS studies of Samarium (Sm³⁺) doped phosphate glass" has been presented at International conference on Healthcare and Technical Research (ICHTR 2015) which was held during 22-24 December 2015 at Manipal University, **Manipal**.
12. **Praveen Devangad**, PhD Thesis, "Chemometric based approaches for Laser Induced Plasma Spectroscopy: Analysis of glass samples for elemental quantification and classification" has been presented at DAE-BRNS National Laser Symposium (NLS-26), held at BARC, **Mumbai**, during 20-23 December 2017.

Other Conferences attended - 5