Dr. M. Mohan Babu

Date of birth: **06/07/1988**
Nationality: **Indian**
Phone No: **(+91) 9533033771**
Email address: **mmbabu771@gmail.com**, **mmbabu@iitkgp.ac.in**

Address: No:1-28/1, Thangellapally, Raindlaguda, Jannaram, Pin code: 504205, Mancheriyal, Telangana-INDIA.

ABOUT ME

Highly motivated and dedicated researcher with proven research experience in the field of Bioglass and Glass-Ceramics for biomedical, Optical applications. Seeking a researcher position in reputed institution to show case my research expertise to develop novel, biodegradable polymers, Nano Bioglass and Glass-Ceramics systems. I'm very much interested in Bone Tissue Engineering, dentistry, orthopedics and polymer-based strategy to control oral biofilms and Biomaterials and the production of mechanically reliable scaffolds from bioceramics for use in bone tissue engineering remains challenging. These concepts and for invention techniques and enhanced tissue interactions lead to in fact biocompatible and biologically reactive biomaterials at the nanoscale level similar to biogenic materials. Demand for this specialty has grown significantly as a result of recent developments in science, technology, and medicine.

I believe it will give me the opportunity to further strengthen my current skills and learn new scientific methods to achieve my long-term goal of establishing my own independent research group. I am looking for positions where I can use my skills sets in overcoming new and exciting challenges.

Google Scholar: https://scholar.google.com/citations?user=mzB979wAAAAJ&hl=en

ORCID: 0000-0002-1675-5921

HONOURS AND AWARDS

- **SERB-National Post Doctoral Fellowship (N-PDF- 2022)**
- **National Scholarship Programme of the Slovak Republic (SAIA Fellowship-2021)**
- **Research Excellence Awards-2021- INDIA InSc Awards Section Institute of Scholars.**
- **CSIR-UGC JRF (National Eligibility Test)-INDIA. Council of Scientific & Industrial Research-2012**

PROFESSIONAL WORK EXPERIENCE

- **December 2022–still** -National Post Doctoral Fellowship (N-PDF) RESEARCHER at Materials Science Center, Indian Institute of Technology IIT Kharagpur, Kharagpur 721302, India.
- **March 2022–July2022:** SAIA Postdoc Researcher at Department of Biomaterials, Alexander Dubcek University of Trencin-Slovakia.
- **August 2020–June 2021**: Project -Research Assistant at National Institute of Technology Warangal –India.
- **December.2013- December12.2019**, 6 years of experience also in conducting physics laboratory Courses for 1st and 2nd Year B.Tech, and 1st, 2nd, 3rd Year M.Sc-tech. students at NIT Warangal –India.
- **December 2015 –December 2018:** Senior Research Fellow at National Institute of Technology Warangal –India.
- **December2013-December2015**:Junior Research Fellow at National Institute ofTechnology Warangal–India**.**

EDUCATION AND TRAINING

Doctor of Philosophy (Ph.D)-2020

Department of Physics-National Institute of Technology, Warangal
Address: Warangal Telangana, 506004 (India)
www.nitw.ac.in

Bachelor of Education (Physical science)

Osmania University [2012]
Address: Tarnaka, 500007 Hyderabad (India)

Master of sciences (M.Sc. Physics)

Osmania University [2011]
Address: Hyderabad (India)

Bachelor of Sciences (Maths,Physics,Chemistry)

Kakatiya University [2008] Bachelor of Education
Address: Hanmakonda, 506009 Warangal (India)

Intermediate (Maths, Physics & Chemistry)

Board of Intermediate Education [2005]
Address: Hyderabad, (India)

S.S.C.

Board of Secondary Education [2003]
Address: (India)

LANGUAGE SKILLS

Mother tongue(s): **Telugu**

English

LISTENING: C2 **READING:** C1 **WRITING:** C2

SPOKENPRODUCTION:C2

SPOKENINTERACTION:C2

Hindi

LISTENING: C2 **READING:** C2 **WRITING:** C2

SPOKENPRODUCTION:C2

SPOKENINTERACTION:C2

DIGITAL SKILLS

Origin 8.5 / X'Pert High Score /Microsoft Office Word Excel Access Power Point Outlook

TECHNICAL EXPERTISE

Research capabilities

- Fabrication of glasses synthesis (Melt-quenching and Sole-gel) and characterization techniques
- A simulated body fluid (SBF) solution preparation and in-vitro bioactivity tested with SBF solution.
- pH calibration and Weight loss measurements testing and Physical parameters.
- Material characterization using XRD, SEM-EDS, ICP-OES, FTIR, TGA-DTA, DSC, Micro harness and glass surfaces polishing.
- Antibacterial and Cell cytotoxicity Test
- Statistical analysis (Graphpad Prism software,andOriginTwo-wayANOVA)
- UV-Vis and Photoluminescence emissionspectra (Horiba Jobin Yvon Flourolog-3 21spectrofluorometer)

INSTRUMENTS HANDLED

Instruments

- Powder X-ray diffractometer (**XRD**: PANalytical X'pert Powder)
- Scanning electron microscopy (**SEM-EDS** model: VEGA 3 LMU, TESCAN)
- Thermal analysis (**TG-DTA**: NETZ5CH-STA 2500Regulu)
- Fourier transform infrared spectrometer (**FTIR**: S 100; Perkin Elmer and BRUKER ALPHA II)
- Microhardness tester (Hv: SHIMADZUHMV-G20S)
- Glass surfaces polishing
- Programmable high electrical muffle furnace
- Tempo boad Incubator
- **UV-Visible-NIR** absorption (Jasco V-670 spectro-photometer and AnalytikjenaSPECORD)
- **Photoluminescence** emission spectra (Horiba Jobin Yvon Flourolog-3-21spectrofluorometer)

Research publications

1. **M. Mohan Babu,** , P. Venkateswara Rao , Rajendra K. Singh, Hae-Won Kim , N. Veeraiah, Mutlu Ozcan, P. Syam Prasad, ZnO incorporated high phosphate bioactive glasses for guided bone regeneration implants: Enhancement of *in-vitro* bioactivity and antibacterial activity, ***Journal of Materials Research and Technology,*** 15 (2021) 633 –646.https://doi.org/10.1016/j.jmrt.2021.08.020. **(Impact Factor: 5.039).**

2. **M. Mohan Babu**, P. Syam Prasad, P. Venkateswara Rao, Nibu Putenpurayil Govindan, Rajendra K. Singh, Hae- WonKim,N.Veeraiah, Titanium incorporated Zinc Phosphate bioactive glasses for bone tissue repair and regeneration, Impact of Ti4+on physic mechanical and in vitro bioactivity, ***Ceramics International,*** 45 (2019)23715–23727. https://doi.org/10.1016/j.ceramint.2019.08.087. **(Impact Factor: 4.527).**

3. **M. Mohan Babu**, P. Syam Prasad, P. Venkateswara Rao, Nibu Putenpurayil Govindan, N. Veeraiah, Mutlu Özcan, Bioactivity, antibacterial activity and functionality of zirconia doped zinc phosphate bioglasses for application in dentistry, ***Materials Science & Engineering C*** 114 (2020) 111052. https://doi.org/10.1016/j.msec.2020.111052. **(Impact Factor: 7.328).**

4. **M. Mohan Babu**, P. Syam Prasad, P. Venkateswara Rao, N. Veeraiah, Effect of Al^{3+} ions substitution in novel zinc phosphate glasses on formation of HAp layer for bone graft applications, ***Colloids and SurfacesB: Biointerfaces,*** 185 (2020) 110591–110599. https://doi.org/10.1016/j.colsurfb.2019.110591. **(Impact Factor: 5.268).**

5. **M. Mohan Babu** , P. Syam Prasad, P.Venkateswara Rao and Mutlu Ozcan, Influence of ZrO_2 Addition on Structural and Biological Activity of Phosphate Glasses for Bone Regeneration, ***Journal of Materials,*** 2020, 13,4058.https://doi.org/10.3390/ma13184058. **(Impact Factor: 3.623).**

6. **M. Mohan Babu**, P. Syam Prasad, P. Venkateswara Rao, and Mutlu Ozcan, Investigations on Physico-Mechanical and Spectral Studies of Zn^{2+} Doped P_2O_5-Based Bioglass System, ***Journal of Composites Science*** 2020, 4, 129. https://doi.org/10.3390/jcs4030129.

7. **M.Mohan Babu**, P. Syam Prasad, In vitro bioactivity investigation of $ZnO–Na_2O–CaO–P_2O_5–SiO_2$bioglass system for medical applications, ***AIP Conference Proceedings,*** 2115 (2019)030270. https://doi.org/10.1063/1.5113109

8. V. Himamaheswara Rao, **M. Mohan Babu**, P. Syam Prasad, P. Venkateswara Rao, T. Satyanarayana, L.F. Santos,N. Veeraiah, Spectroscopic studies of Dy^{3+} ion doped tellurite glasses for solid state lasers and white LED's, ***Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy,*** 188(2017)516–524. http://dx.doi.org/10.1016/j.saa.2017.07.013. **(Impact Factor: 4.098).**

9. V. Himamaheswara Rao, **M. Mohan Babu**, P. Syam Prasad, P. Venkateswara Rao, G. Nagaraju, L.F.Santos, N. Veeraiah, Luminescence properties of Sm^{3+} ions doped heavy metal oxide tellurite-tungstate-antimonate glasses, ***Ceramics International,*** 43(2017) 16467–16473. http://dx.doi.org/10.1016/j.ceramint.2017.09.028. **(Impact Factor: 4.527).**

10. J. Bhemarajam, Swapna, **M.MohanBabu**, P. SyamPrasad, M. Prasad,Spectroscopic studies on Er^{3+} ions incorporated bismuth borate lithium glasses for solid state lasers and fiber amplifiers. **Optical Materials**113 (2021) 110818**.** https://doi.org/10.1016/j.optmat.2021.110818. **(Impact Factor: 3.08)**

11. B. Madhavi, A. Siva Sesha Reddy, P. Syam Prasad, **M. Mohan Babu**, P. Raghava Rao V. Ravi Kumar, N. Veeraiah , In-vitro bioactivity and antibacterial properties of CaF_2–CaO–B_2O_3–P_2O_5–SrO glass system-influence of Ta_2O_5 ***Journal of Non-Crystalline Solids,*** 566 (2021) 120881. https://doi.org/10.1016/j.jnoncrysol.2021.120881. **(Impact Factor: 3.531).**

12. P. Syam Prasad, V. Himamaheswara Rao, **M. Mohan Babu**, P. Venkateswara Rao, G. Naga Raju & C. Laxmikanth, Spectroscopic investigations of the PbO–MoO_3–P_2O_5:V_2O_5 glass system, ***Physics and chemistry of glasses-European Journal of Glass Science and Technology Part B,*** 56 (2015)169-174. https://doi.org/10.13036/17533562.56.4.169 **(Impact Factor: 0.63).**

13. J. Bhemarajam, **M.Mohan Babu**, P. SyamPrasad, M. Prasad, Optical studies on Er3+/Yb3+ co-doped ions incorporated bismuth boroleadlithium glasses for solid-state lasers and photonic applications **Optical Materials** 122 (2021) 111657. https://doi.org/10.1016/j.optmat.2021.111657. **(Impact Factor: 3.08).**

14. J. Bhemarajam, **M.Mohan Babu**, P. SyamPrasad, M. Prasad, Efficacy of various modifier oxides (MO= ZnO, CdO, BaO and PbO) on improving the structural and optical properties of bismuth borate lithium glasses. ***Journal of Composites Science 2021, 5, 308.*** https://doi.org/10.3390/jcs5120308.

15. A. Pranav Kumar**,** P. Syam Prasad, P, **M. Mohan Babu,**. Venkateswara Rao, Structural investigations of borate incorporated germanium antimonate glasses, ***Results in Chemistry*** Volume 4(2022) 100449. https://doi.org/10.1016/j.rechem.2022.100449

16. **M. Mohan Babu,** P. Syam Prasad, P. Venkateswara Rao, Development of Mg-doped bioglass composite bioactivity: glass characterization,physical and antibacterialproperties, ***Journal of Alloys and composites (UnderReview).***

17. **M. Mohan Babu,** P. Syam Prasad, In vitro bioactivity evaluation, antimicrobial behavior and thermal analysis of Iron-containing phosphate glasses, ***Ceramics International*** (UnderReview).

18. **M. Mohan Babu,** J. Bhemarajam, P. Syam Prasad, Preparation and in vitro characterization of Bioactive Glasses and Glass-Ceramics for Healthcare Applications in Bone Regeneration and Tissue Engineering, Journal of ***Materials Science & Engineering C*** (UnderReview).

National/International Conferences

1. **M. Mohan Babu,** P.Syam Prasad "In vitro bioactivity evaluation, antimicrobial behaviour and thermal Analysis of Iron-containing phosphate glasses", ***International Conference on Advances in Glass and Glass-Ceramics (ICAGGC-2022)***, August 23-25, 2022, at CGCRI, Kolkata, India.
2. **M. Mohan Babu,** P.Syam Prasad "In vitro bioactivity and antibacterial activity of phosphate based bioactive glasses influenced by Cu^{2+} ions for bone tissue engineering applications", ***International Conference on Bioengineering &Regenerative Medicine***-2020, February 27-29 2020 , at IITBHU, Varanaasi India.
3. P.Syam Prasad, **M. Mohan Babu,** P. Venkateswara Rao, "In vitro bioactivity, structural and mechanical properties of Zn^{2+}, Al^{3+} and Ti^{4+} ions doped novel Phosphate glasses for bone implant applications" presentedin ***The 2nd World Summit on Advances in Science, Engineering and Technology", Indiana Summit 2019in Indiana University*** -**Purdue University, Indianapolis,** USA, from Oct 3-5, 2019
4. **M.Mohan Babu**, P.Syam Prasad, Effect of Al_2O_3 on in-vitro bioactivity and Physico chemical properties of P_2O_5 based bioglasses, presented in International ***Conference on Advanced Functional Materials and Devices (ICAFMD-2019)*** on 26th - 28th February 2019, at NIT-Warangal.
5. **M. Mohan Babu**, P. Syam Prasad, In vitro bioactivity investigation of ZnO–Na_2O–CaO–P_2O_5–SiO_2bioglass systemformedicalapplications,presentedin63rd***DAE-SSPS washeldat Guru JambheshwarUniversity of Science andTechnology (GJUS&T), Hisar,*** Haryana during December 18-22,2018.
6. **M.Mohan Babu**, V.Himamaheswara Rao, P.Syam Prasad, The Effect of ZrO_2 doped bioactive glass structural properties of ZnO–Na_2O–CaO–P_2O_5 bioglass system analysis, was presented in ***International conference on Biomaterials, Bioengineering, and BioTheranostics (BioMet-2018)*** on 24-28 July 2018at Vellur Institute of Technology,Chennai.

7 **M.MohanBabu**, V.Himamaheswara Rao, P.Syam Prasad, Development and in-vitro Characterization of the $ZnO–Na_2O–CaO–SiO_2–P_2O_5$ Bioactive Glass System, ***International Conference on Material Science and Technology (ICMST-2018)*** on 10-13 October 2018 at Thiruvananthapuram,Kerala.

8 **M.Mohan Babu**, V.Himamaheswara Rao, P.Syam Prasad, Preparation of melt-derived bioglass and its characterization of in-vitro bioactivity analysis International conference on "***Expanding Horizons of Technological Applications of Ceramics and Glasses***" 14-16 December 2017 at College of EngineeringPune.

9 **M.Mohan Babu**, V.Himamaheswara Rao, P.Syam Prasad, Synthesis, Characterization of bioglasses for In-vitro bioactivity studies, is presented ***in International Conference of Young Researchers on Advanced Materials (IUMRS)*** on 11-15 December 2016 atIISC-Bangalore.

10. P.Syam Prasad, **M. Mohan Babu,** P. Venkateswara Rao, G.Nagaraju, Structural and In-vitro bioactivity of Phosphate based bioglass for bone regeneration, is presented in ***International Conference on Bio-Based Polymers and Composites (BiPoCo -2016)*** on August 28-September 1, at Szeged,Hungary.

11 **M. Mohan Babu**, V. Himamaheswara Rao P. Venkateswara Rao, P. Syam Prasad, Influence of antimony oxide on structural and optical properties of TeO_2-Sb_2O_3- WO_3 ternary glass system, was presented atInternational Seminar on "Glasses and other Functional Materials"conducted by Department of Physics, Acharya Nagarjuna University. 11-13th December, 2014 at Guntur AP India.

Seminar/Workshops

1. A Two week Science Academies 95th Refresher course in "**Experimental Physics"** organized byDepartment of Physics National Institute of Technology Warangal, India, 9-24 January 2018.

2. International Pre-conference Workshop on **Biomaterials, Bioengineering, and BioTheranostics** (BioMet-2018) at Vellur Institute of Technology, Chennai, India, 24-25 July 2018.

3. Application of Radiation and Radioisotopes in Industry and Materials science conducted by Department of Physics National Institute of Technology Warangal, India, on 26-30 November 2018.

4. Concept based teaching and learning physics through experiments in undergraduate education (CTLP-17) organized by the department of physics in association with Teaching learning centre, National Institute of Technology Warangal, India. 2-4 March 2017.

5. "**Resent Developments in Nano Materials and Application (RDNA-2015)"** conducted by Department of Physics National Institute of Technology Warangal On 30th March 2015.

6. "**Advanced Photonics Technologies for Science and Engineering Applications**" conducted by Department of Physics National Institute of Technology Warangal, on 12th April 2015.

7. "**Thermal Analysis of Materials using DSC, DTA, TG & Dilatometer"** at IIT Hyderabad during 23-25 July 2015.

8. "**Advanced Materials Characterization Techniques**" conducted by Department of Material Science & Metallurgical Engineering IIT Hyderabad from 12-14 Aug 2014.

9. "UGC-NRCM Workshop on **Biomaterials**" conducted by Department of Materials Engineering. IISC Bangalore from 23-25 May 2014.

Book Chapters:

1. "Structural and in vitro bioactivity of phosphate-based glasses for bone regeneration**" M. Mohan Babu** , P. Venkateswara Rao , Nibu Putenpurayil Govindan, Raghavendra Gujjala, P. Syam Prasad, **Springer's Book Volume: Advances in Glass Research**

2. "Yttria based transparent ceramics for photonic application: Powder synthesis, Green body preparation, sintering and Optical properties". Nibu Putenpurayil Govindan, **M. Mohan Babu**, P. Venkateswara Rao, and P. Syam Prasad" **Springer's Book Volume: Advance Ceramics, ISSN: 2662-4761, Advances in Materials Research and Technology.**

REFEREES LIST

Prof.P. Syam Prasad
Department of Physics,
National Institute of technology
Warangal, Telangana, INDIA.
Phone no:+918332969472,
Email:syam9405@gmail.com
syamprasad@nitw.ac.in

Prof. Mutlu Ozcan
University of Zurich, Center for Dental and Oral Medicine, Dental Materials Unit,
Clinic for Fixed and Removable Prosthodontics and Dental Materials Science,
Plattenstrasse 11, CH-8032,
Zurich, Switzerland.
Phone no +41-789486939
Email: mutluozcan@hotmail.com

Prof. P. Venkateswara Rao
Department of Physics,
University of the West Indies,
Mona Campus, Jamaica.
Phone no:+1(876) 512-198,
Email: pvrao54@gmail.com

Prof. S. Shirish Hari,
Department of Chemical Engineering,
National Institute of Technology Warangal,
Warangal-506004Telangana, INDIA
Phone no:+8332969397,
Email: shirish@nitw.ac.in

Declaration:

I hereby declare that the information furnished above is true to the best of my knowledge.

Place: NIT Warangal.

Date: 13.12.2022

(Dr. M. Mohan Babu)