



I the undersigned asks to participate in the public selection, for qualifications and examinations, for the awarding of a type B fellowship at Dipartimento di Scienze Biomediche e Cliniche "L. Sacco".

Scientist- in - charge: Prof.ssa Jeanette Maier

[MOHAMMED MONSOOR SHAIK]

## CURRICULUM VITAE

### PERSONAL INFORMATION

Surname	SHAIK
Name	MOHAMMED MONSOOR
Date of birth	27, AUGUST, 1988

### PRESENT OCCUPATION

Appointment	Structure
NOT EMPLOYED	N.A

### EDUCATION AND TRAINING

Degree	Course of studies	University	year of achievement of the degree
Degree	MASTER OF SCIENCE (BIOTECHNOLOGY)	BANGALORE UNIVERSITY	2010
PhD	BIOMEDICAL ENGINEERING	BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE- PILANI, INDIA	2019

### FOREIGN LANGUAGES

Languages	level of knowledge
ENGLISH	PROFICIENT
HINDI	MOTHER TONGUE
TELUGU	MOTHER TONGUE

### AWARDS, ACKNOWLEDGEMENTS, SCHOLARSHIPS

Year	Description of award
2013	"Best Paper Presentation" on "Preparation and characterization of Chitosan Nano- Silver bio-composites for wound healing applications" held at International Conference on Nano Materials: Science, Technology, and Applications, India 2013.



TRAINING OR RESEARCH ACTIVITY

Research activity (Ph.D.)

**Studies on Fabrication of Bilayer Scaffolds Incorporating Antibacterial and Antioxidant Agents for Wound Healing Applications**

- Fabricated the drug loaded tissue engineering scaffolds for chronic wounds by using novel melt-down neutralization method
- Developed "melt-down neutralization method" which ensured the homogenous distribution of the drugs across the scaffolds, facilitating the sustained release of drug molecules.
- Developed bilayer scaffolds with a chitosan layer doped with silver, and collagen layer doped with various polyphenol based anti-oxidants. The wound healing properties of these bilayer scaffolds were studied in *in vitro* and *in vivo* (Wistar rats) systems.

**Self-activated fluorescent hydroxyapatite nanoparticles: a promising agent for bioimaging and biolabeling**

During the Ph.D., I have synthesized calcium phosphate based hydroxyapatite nanoparticles for deep wound scaffolds to initiate a better osteo-integration with the dermal counterparts. During this process, I gained experience in inorganic chemistry, specifically related to synthesis of calcium phosphate based bone substitutes and their physico-chemical characterization. The biocompatibility of these NP's were extensively studied on both prokaryotic and eukaryotic systems. Upon further exploration, the nanoparticles were found to be fluorescent in nature which opened a plethora of applications in bio-imaging and gene delivery. This work has been published in ACS Biomaterials and Science.

Technical skills and competences

The research activity carried out in all these years has required the use of multidisciplinary approaches, ranging from nanotechnology to biomedical engineering, animal studies to molecular biology procedures. During my Ph.D., as part of my biomedical applications, I worked on fibroblast, keratinocytes, and epithelial cell lines by analyzing the biocompatibility through MTT, LDH and Apoptosis assay. I have gained the experience in the fields mentioned below.

- **Biological Sciences**
  - **Cell culture Technique** : Culturing and maintenance of animal cells
  - **Animal Studies**: Experienced in handling animals (Wistar Rats) and *in vivo* studies
  - **Molecular Techniques**: Isolation and purification of DNA & RNA, restriction digestion, bacterial cloning, PCR, RT PCR, transformation and transfection method.
  - **Microbiology Techniques**: Isolation and characterization of bacteria/yeast, 16s rRNA sequencing, culturing of bacterial cells, staining methods, cultivation of biofilms. Experience of working in Biosafety level-2 (BSL-2) laboratories.
- **Nanotechnology**: Synthesis of inorganic (Hydroxyapatite, silver) and organic (chitosan) nanoparticles
- **Material Science**: Fabrication of polymeric matrices for therapeutic applications ranging from wound healing to bone regeneration
- **Characterization techniques**: X-ray diffraction (XRD), Fourier transform infrared spectroscopy (FTIR), Thermogravimetric analysis (TGA), Differential scanning calorimetry (DSC), Brunauer-Emmett-Teller (BET) surface area, Dynamic light scattering (DLS), Zeta potential, Rheometer, fluorescence spectroscopy, flame photometer, atomic absorption spectroscopy (AAS), transmission electron microscopy (TEM) and Scanning electron microscopy (SEM)
- **Environmental Engineering**: Anaerobic fermentation, Reactor scale-up to remediate the bauxite land fill, bioleaching of metals

PROJECT ACTIVITY

Year	Project
2018-2019	<p><b>Bioremediation of Red mud using acidogenic fermentation byproducts and by Biopiling</b>                      Project fellow (12<sup>th</sup> July 2018 - 30<sup>th</sup> Sep 2018)                      Research Associate (01<sup>st</sup> Oct 2018 - 30<sup>th</sup> Nov 2019)</p> <ul style="list-style-type: none"> <li>• Designing and establishing a treatment process to neutralize highly alkaline red mud based on ABSTC regulatory objectives</li> </ul>



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|  | <ul style="list-style-type: none"><li>• Generating data to substantiate the treatment process, regarding the safety and efficiency of waste and communicate them in technical reports and presentations</li><li>• Planning, carrying out the process trials in laboratory and pilot scale</li><li>• Scaling up the treatment process to neutralize redmud on the landfill</li><li>• Designing and validating the effluent treatment system by using algal ponds for safe disposal of the leachate</li></ul> |
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## CONGRESSES AND SEMINARS

Date	Title	Place
Dec 5 <sup>th</sup> - 7 <sup>th</sup> , 2013	International Conference on Nanomaterials: Science, Technology and Applications(ICNM'13)	Chennai, India

## PUBLICATIONS

Articles in reviews
Antioxidant-antibacterial containing bi-layer scaffolds as potential candidates for management of oxidative stress and infections in wound healing, <i>Journal of Materials Science: Materials in Medicine</i> , Springer, 2019, (30) 1-13.
Ellagic acid containing collagen-chitosan scaffolds as potential antioxidative bio-materials for tissue engineering applications, <i>International Journal of Polymeric Materials and Polymeric Biomaterials</i> , Taylor & Francis Group, 2018, 1-8.
Novel melt-down neutralization method for synthesis of chitosan-silver scaffolds for tissue engineering applications, <i>Polymer Bulletin</i> , Springer, 2016, (73) 841-858.
Self-activated fluorescent hydroxyapatite nanoparticles: a promising agent for bioimaging and biolabeling, <i>ACS Biomaterials Science &amp; Engineering</i> , ACS Publications, 2016, (2) 1257-1264.
Nanomaterial-based approaches for prevention of biofilm-associated infections on medical devices and implants, <i>Journal of nanoscience and nanotechnology</i> , American scientific publisher, 2015, (15) 10108-10119.

## OTHER INFORMATION

<p><b>Teaching Assistance during Ph.D at BITS Pilani (Jan 2012 - Apr 2018)</b></p> <ul style="list-style-type: none"><li>• Experimental Techniques: Cell culture and PCR techniques.</li><li>• Instrumental Methods of Analysis Laboratory: Biophysical characterization techniques: X-ray diffraction, FT-IR spectroscopy, Atomic Absorption spectroscopy, Flame photometry, Fluorescence spectrometry, UV-Visible spectroscopy, and Thin Layer Chromatography.</li><li>• Microbiology Laboratory: Basic microbiological techniques.</li><li>• Measuring Techniques-I/ Biology laboratory: Basic techniques of quantitative biology.</li></ul>
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Declarations given in the present curriculum must be considered released according to art. 46 and 47 of DPR n. 445/2000.

The present curriculum does not contain confidential and legal information according to art. 4, paragraph 1, points d) and e) of D.Lgs. 30.06.2003 n. 196.

Place and date: MONZA, 11/04/2020.

SIGNATURE