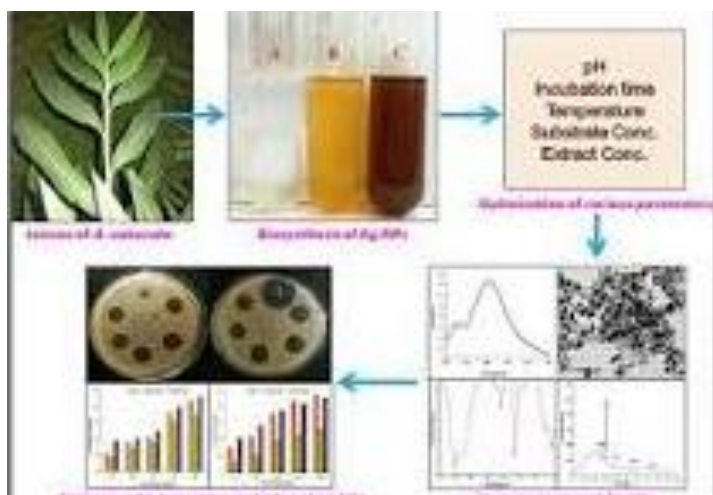




Shri Shivaji Education Society's  
Mahasate Arts, Commerce and Science College  
Ulga, KARWAR

## DEPARTMENT OF CHEMISTRY



## ADD ON CERTIFICATE COURSE IN SYNTHESIS OF METAL NANOPARTICAL

The synthesis of metal nanoparticles is crucial due to their unique properties, such as high surface area, enhanced reactivity, and size-dependent behaviors. These properties enable breakthroughs in medicine (drug delivery, cancer treatment), environmental protection (pollution control, sensing), catalysis (faster reactions), electronics (miniaturization, improved energy storage), and materials science (stronger, more durable materials).

Last Date for enrollment  
28/3/2024



Ref:MACS/2023-24/

DATE: 18-03-2024

### Proceedings of BOS of Add-on Course

Proceedings of the meeting of BOS of Add on course Entitled "**Synthesis of Metal Nanoparticle**" By the Dept. of Chemistry, held on 18-03-2024 at 3.30 pm in IQAC Room  
Agenda:

1. To approve the Ad-on courses
  2. To frame syllabus for Ad-on courses
  3. Implementation of Ad-on courses
  4. Preparation of Time Table
  5. Conduction of course, class/Exams
- The following members were present:
1. Dr.V.V.Nayak-Principal Charman
  2. Dr.I.R.Kajagar.Dept.of Pol-Science- Convener IQAC Co-ordinator
  3. Smt.S.S.Gaonkar.HOD of Economics-Member
  4. Smt.Roopa D.Kudtarkar.HOD,Commerce-Member
  5. Shri.Prasad S. Naik, FDC-Member
  6. Shri.Raghavendra Shet- Entrepreneur
  7. Shri.Sudheer Nagekar-ember-

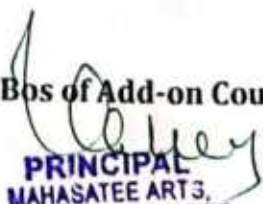
#### Alumni Resolutions:

1. Read and confirmed the minutes of last meeting held on 19.01-2024. After detailed discussion the following resolutions were passed as under:
  1. The panel of BOS scrutinized Add on course and finalized
  2. The panel of BOS of Add on course recommended the syllabus model of different Add on course
  3. The members expressed that Time table should be stipulated on Sunday and working days.
  4. The panel of BOS of Add on course is approved to implement all the Add on courses as early as possible.

The meeting was concluded with the chairman thanking all the members for their active participation and co-operation.



Chairman Bos of Add-on Course

  
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ಶ್ರೀ ಶಿವಾಜಿ ಶಿಕ್ಷಣ ಸಂಸ್ಥೆಯ  
ಮಹಾಸತಿ ಕಲಾ,ವಾಣಿಜ್ಯ ಹಾಗೂ ವಿಜ್ಞಾನ ಮಹಾವಿದ್ಯಾಲಯ ಉಳಗಾ,ಕಾರವಾರ-581328  
ನ್ಯಾಕನಿಂದ "ಬಿ" ಮಾನ್ಯತೆ ಪಡೆದಿದೆ

ShriShivaji Education Society's,  
MAHASATEE ARTS,COMMERCE& SCIENCE COLLEGE,ULGA,KARWAR,  
Uttar Kannada,Karnataka-581328

Accredited by NAAC with "B" Grade Phone:08382-257033  
E-mail:sesmahasateek@gmail.com Website:www.sesmacs.co.in

Date:19-3-2024

## DEPARTMENT OF CHEMISTRY

### STUDENT NOTICE

This is to inform all the students of B.Sc that Department of Chemistry is organizing an Add-on Certificate program in "Synthesis of Metal Nanoparticle" from the 29<sup>TH</sup> March 2024.

Interested student should immediately contact Smt.Sonali Savant, Head of the Chemistry Department on or before 28<sup>TH</sup> MARCH-2024. for further details in connection with the time Table or other related matters.

Sign. of HOD Chemistry



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E-mail:sesmahasateek@gmail.com Website:www.sesmacs.co.in

Date:28-3-2024

## DEPARTMENT OF CHEMISTRY

### STUDENT NOTICE

This is to inform all the students who have registered their name for the Add on Certificate course on "Synthesis of Metal Nanoparticle" classes will start from 29<sup>TH</sup> March-2024.

Add on Certificate course on "Synthesis of Metal Nanoparticle" classes will engaged at 4.00pm to 5.00pm on all working days.

  
HOD

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**DEPARTMENT OF CHEMISTRY**  
**Add-on Certificate course-2023-24**

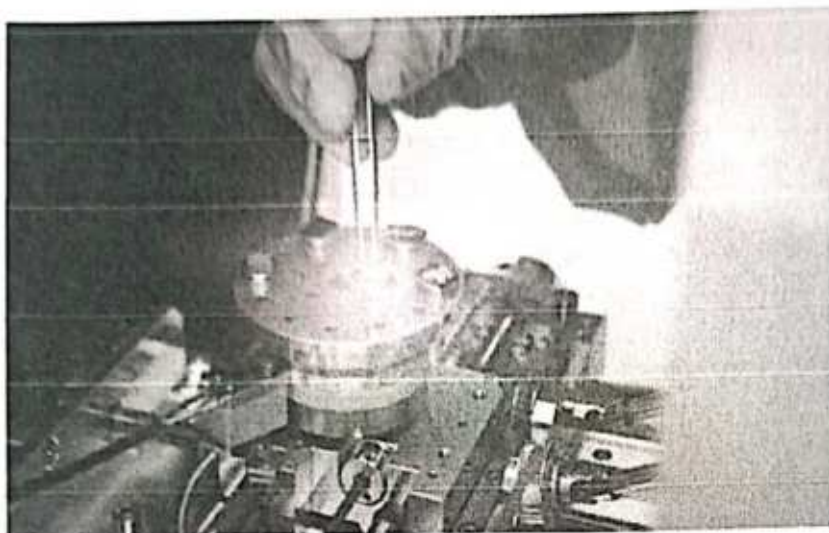
List of students enrolled for "SYNTHESIS OF METAL NANO PARTICLES"

Sl.No	Name of the Students
1	Miss. Annapurna. N. Gunagi
2	Miss. Siddhi. S. Gouda
3	Miss. Sushma. R. Gaonkar
4	Miss. Rashika. E. Kotharkar
5	Sri. Vaibhav. V. Devadas
6	Sri. Amith. A. Talekar
7	Miss. Pratiksha. S. Kankonkar
8	Miss. Aishwarya. S. Pednekar
9	Sri. Akshay Shantaram Naik
10	Sri. Narendra suresh yellekar
11	Sri. Prakash Hanamant Bevoor
12	Miss. Bhagyalaxmi Shankar Kundapur
13	Sri. Muttanna Hanumantaraya Police patil
14	Sri. Sujal Anandu wagdhare
15	Miss. Saniya Ibrahim Shaikh
16	Sri. Santosh. K. Gavada
17	Miss. Swati. U. Kankonkar
18	Miss. Pooja. P. Pagi
19	Sri. Rahul. D. Naik
20	Sri. Roshan. S. Bandekar
21	Sri. Shivanand. K. Achari
22	Sri. Pranay. B. Naik
23	Sri. Yogesh. A. Gavada
24	Miss. Neeta Dsouza



  
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***PROPOSAL FOR ADD-ON COURSE ENTITLED:  
SYNTHESIS OF METAL NANOPARTICLES***



***Submitted by***

***DEPARTMENT OF CHEMISTRY  
MAHASATEE ARTS, COMMERCE  
AND SCIENCE COLLEGE, ULGA  
KARWAR***





## INTROUDCTION

Nanotechnology is the study of manipulating matter on an atomic and molecular scale, generally nanotechnology deals with budding materials devices or other structures possessing at least one dimension of order of a billion meter. The first use of the concepts in nanotechnology was in "there's plenty of room at the bottom." a talk given by physicists Richard Feynman at American physical society meeting at Caltech on December 29 1959. Feynman described a process by which the ability to manipulate individual atom and molecules might be developed, using one set of precise tools to build and operate another proportional smaller set, so on down to the needed scale. In the course of this, he noted, scaling issues would arise from the changing magnitude of various physical phenomena, gravity would become less important, surface tension and wonder walls attraction would become more important, etc. This basic idea appears believable, and exponential assembly enhances with parallelism to produce a useful quantity of end products.

## COURSE OVERVIEW

The metal based nanoparticles have wide range of applications in water purification, textiles, cosmetics, electrical, medical fields and in biology. In this project report, we have synthesized silver nanoparticles (AgNPs) by Microwave assisted biochemical reduction method at different concentration of metal ions and plant extract. For the synthesis of AgNPs, AR grade of silver nitrate and fresh plant extract was used. The formation of AgNPs was monitored by using absorption spectrophotometer (INTECH 2700) for surphaseplasmaon resonance (SPR) peak obtained at 405 nm, this clearly indicates that the formation of size controlled AgNPs using biochemical from *VincaRosea*. As increasing the microwave irradiation (from 0-3 min), the color intensity of formation of colloidal solution is also increased. In addition, the color changes from light yellow to dark brown after 3 min of Microwave irradiation is also corroborated the formation of AgNPs from plant extract. The slurry of obtained solid nanoparticles in the solution was collected by centrifugation at 1000 RPM followed by washing with ethanol and water, then dried at 70°C in Vaccum Oven. The dried solid powder was characterized in different analytical techniques such as UV-Visible spectrophotometer, Fourier transformer Infrared Spectroscopy (FT-IR), X-ray diffraction technique (XRD) and Field emission scanning electron microscopy (FESEM). Even more, catalytic activity of NP was done by using different dyes. In conclusion, we have achieved a simple, rapid and environmentally friendly method for the synthesis of size controlled AgNPs under Microwave irradiation method using bio extract as both reducing



and stabilizing agent. Thus, this method will be the new insights into the preparation of cost effective AgNPs for different biomedical applications.

### AIM OF COURSE

1. Collection of fresh plant leaves followed by screening and confirmation of phytochemicals (Viz., Flavonoid; tannins; Saponins; alkaloids etc.) from *Vincarosea*.
2. Synthesis and *insitu* bio functionalization of AgNPs from *Vincarosea*, which act as both reducing and stabilizing agent, under simple Microwave irradiation.
3. Formation of AgNPs were confirmed by various physico-chemical techniques Viz., UV-Visible spectrophotometer, Fourier transformer Infrared Spectroscopy (FT-IR), X-ray diffraction technique (XRD) and Field emission scanning electron microscopy (FESEM).
4. *In vitro* antimicrobial validation of as synthesized AgNPs for different homo pathogenic strains such as *S. aureus*, *S. typhi*, *E. Coli* and *P. aeruginosa*.
5. Report the data after the full understanding of the above characterization techniques and confirmation.
6. Submission of project report to Gokhale Centenary College, Ankola (Karnataka University Dharwad).
7. Nanotechnology is helping to considerably improve, even revolutionize, many technology and industry sectors: information technology, homeland security, medicine, transportation, energy, food safety, and environmental science, among many others.
8. understanding of the formation of complex macro systems which are unique in their operations and possess new functionalities. in-depth knowledge of at least one specialisation area within the field of nanoscience and nanotechnology. proficiency in translating this knowledge into useful technological applications.





## SYLLABUS

This includes sub fields which develops or study material having unique properties arising from their nanoscalediaminensions.

\*Interface and colloid science has given rise to many materials which may be useful in nanotechnology, such as carbon nanotubes and other fullerenes, and various nanoparticles and nanoroads.

\*Nanoscale materials can also be used for bulk applications most present commercial applications of nanotechnology are of this flavor.

\*Progress has been made in using these materials for medical application.

\*Nanoscale materials are sometimes used in solar cells which combats the cost of traditional silicon solar cells

### Bottom- up approaches

These seek to arrange smaller components into more complex assemblies

\*DNA nanotechnology utilized the specificity of Watson-crick. Base-pairing to construct well-defined structure out of DNA and other nucleic acid.

\*Approach from the field of " classical" chemical synthesis also aim at designing molecules with well-defined shape (e.g. bis-peptides).

\*More generally, molecular self - assembly six to use the concepts of super molecular chemistry, and molecular recognition in particular, to cause single molecule components to automatically arrange themselves into some useful confirmation.

### Top down approaches

These seek to create smaller devices by using larger ones to direct their assembly. Many technologies descended from conventional solid-state silicon methods for fabricating microprocessors are now capable of creating features smaller than 100nm, falling under the definition of nanotechnology. Giant magneto resistance-based hard drives already on the market fut thus description, as do atomic layer deposition (ALD) techniques. Peter grunberg and albert fert received the nobel prize in physics for their discovery of giant magneto resistance and contribution to the field of spintronic 2007

- Solid state techniques can also be used to create devices known as nano- electro chemical systems or NEMS, which are related to microelectrode mechanical systems or MEMS.



- Atomic force microscope tips can be used as a Nano-scale "write head " to deposit a chemical upon a surface in a desired pattern in a process called dip pen nano lithography. This fits into the larger subfield of nanolithography.

## ***CAREER OPPORTUNITIES***

Nanoscience is a field with many practical applications, such as forensics, environmental testing, explosive detection and other laboratory technology fields. Also, Chemists work in a variety of industries including pharmaceuticals, petroleum, government laboratories, food, agriculture, and consumer products.

Analytical chemist

Agricultural chemist

Soil and plant chemist

Technologist

Medicinal use

## **REFERENCE**

- Introduction To Nanoscience And Nenotechnology  
-Chattopadhyay, Chattopadhyay K. K., banerjee A. N.
- Textbook of Nanoscience and Nanotechnology  
-B.S. Murty, P. Shankar, Baldev Raj, B BRath, James Murday
- Introduction to Nano: Basics to Nanoscience and Nanotechnology -  
AmretashisSengupta, Chandan Kumar Sarkar.



  
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**Affiliated to Karnatak University Dharwad**

**IQAC Initiative**

**ADD-ON COURSE**

**Conducted by**

**DEPARTMENT OF CHEMISTRY**

**SYNTHESIS OF METAL NANOPARTICLES**

This is to certify that **Mr./Ms.** Aishwarya S. Pednekar

Class B.Sc III satisfactorily completed the course during the year 2023-24

*[Signature]*

**HOD. CHEMISTRY**

*[Signature]*

**PRINCIPAL**

**MAHASATEE ARTS, COMMERCE &  
SCIENCE COLLEGE, Ulga, Karwar**



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**IQAC Initiative**

**ADD-ON COURSE**

**Conducted by**

**DEPARTMENT OF CHEMISTRY**

**SYNTHESIS OF METAL NANOPARTICLES**

This is to certify that Mr./~~Ms~~ Shivanand K. Achari

Class B.Sc III satisfactorily completed the course during the year 2023-24

*Sant*

**HOD. CHEMISTRY**

*[Signature]*

**PRINCIPAL**

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SCIENCE COLLEGE, Ulga, Karwar**