REFERENCES:

1.Practical Organic Chemistry-F .G. Mann and B. C. Saunders (ELBS, England), 2001.

2. Practical Organic Chemistry - A. I. Vogel (Longman-ELBS, England), 1971.

3. Experimental Organic Chemistry–Vol.I&II Singh et al(TMH, New Delhi)1981.
4. Semimicro Qualitative Organic Analysis–Cheronis etal Wiley-Eastern, New Delhi) 1964.

5. Vogel's Text Book of Practical Organic Chemistry Including Qualitative Organic Analysis- B. S. Furniss *et al* (Longman-ELBS, England), 1978.

6. Manual of Organic Chemistry - Dey and Seetharaman.

7. Modern Experimental Organic Chemistry-John H. Miller and E.F. Neugil.

CH P 459: PHYSICAL CHEMISTRY PRACTICALS- II
(At least 12 experiments are to be carried out)

COURSE OUTCOME:

- In continuation with the practical course introduced in the first semester, this course provides opportunity to students to test the concepts learnt in the basic physical chemistry course CH H 403.
- Experiments have been designed on thermodynamics, kinetics, surface and interface chemistry. With the training gained.
- Students will be able to handle issues related to metallurgical processes, waste water treatment, energy efficient processes, action of soaps and detergents etc.

1. Determination of cryoscopic constants of solvents and molecular weight of non volatile substances by thermal method.

2. Determination of degree of dissociation, Vant Hoff factor and molecular weight of an electrolyte by cryoscopy method using copper calorimeter/Dewar flask..

3. Heat of solution of a sparingly soluble compound in water by solubility method.

4. Phase diagram of two component systems by thermal analysis.

5. Phase diagram of three component system (a) 3 liquids with single binodal curve, and b) two liquids and one solid

6.Kinetics of acid catalyzed hydrolysis of methyl acetate and determination of (a) order and rate constant and (b) Energy of activation.

7. Determination of a) Energy of activation & b) rate constant for the First and second order kinetics of reaction between potassium persulphate and potassium iodide.

8. Kinetics of sodium formate – iodine reaction.

9. Determination of the latent heat of evaporation of carbon tetrachloride.

10. Preparation of colloidal solutions.

11. Verification of F & L adsorption isotherms for acetic acid on activated charcoal.

12. To study the adsorption of iodine on charcoal from alcoholic solution.

13. To study the effects of gelatin solution on the precipitation values.

14. Comparison of detergent action of detergents and determination of interfacial tension.

15. Thermodynamic prediction and measurement of the solubility of naphthalene in benzene.

Study of association of benzoic acid in benzene/toluene. Any other relevant experiments of interest.

REFERENCES:-

1. Practical Physical Chemistry- B Viswanathan & P.S Raghavan,(ViVa Books, Delhi) 2005.
2. Findlay's Practical Physical Chemistry- B. P. Levitt (Longman, London).
3. Experiments in Physical Chemistry– James and Prichard.
4. Experimental Physical Chemistry - Daniels et al.
4. Experimental Physical Chemistry-Das & Behera (Tata McGraw Hill, New Delhi)1983.
5. Advanced Practical Physical Chemistry–Yadav (1989).
6. Experiments in Physical Chemistry–J. C. Ghosh (Bharathi Bhavan)1974.

3rd SEMESTER

CH H 501: COORDINATION CHEMISTRY

COURSE OUTCOME:

- The students will learn spectral properties of complexes, interpretation of spectra
- Photochemistry of metal complexes, Magnetic behavior of metal complexes,
- Spectral applications of coordination compounds,
- Reactions mechanisms in Transition metal complexes, Electron transfer reactions.

UNIT- I: **[15 Hours]**

Spectral properties of complexes: Term symbols for d^n ions, spectroscopic ground states, selection rules, nature of spectral bands- band shapes, band intensities, band widths, spin-orbit coupling, vibrational structures.

Orgel diagrams, Tanabe-Sugano diagrams, interpretation of spectra of octahedral, distorted octahedral, tetrahedral and square planar complexes, Determination of o from spectra. Charge transfer bands – origin, types, and characteristics. Photochemistry of metal complexes- photosubstitution and photoredox reactions, ligand photoredox reactions, photoreactions and solar energy conversion.

UNIT- II: **[15 Hours]**

Type of magnetic behaviour, orbital contribution, spin orbit coupling, spin cross-over systems. Measurement of magnetic susceptibility – Gouy and Faraday methods, diamagnetic corrections, ferro- and antiferromagnetic coupling, super paramagnetism. High and low spin equilibria. Magnetic properties of lanthanides and actinides. Infrared spectra of metal complexes, Group frequency concept. Changes in ligand vibrations on coordination- metal ligand vibrations. Spectral applications of coordination compounds - IR spectra of metal

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on

Frontier Research in Chemical Sciences 2020

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Resource Persons

Alumnae of the Department

Dr. Sahana Mallya
SRI International, USA

Dr. Rashmi Nayak
NCL Pune, India

Dr. Shridevi S. Bhat
New York, USA

Dr. Anitha Alanthadka
IIT Roorkey, India

Dr. A. S. Amrutha
RIES, Hokkaido University, Japan

Dr. Sahana Roessler
Max-Planck Institute, Germany

Patron

Prof. P. S. Yadapadithaya, Hon'ble Vice Chancellor

Prof. B. Vishalakshi
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International Webinar
on
Frontier Research in Chemical Sciences 2020
September 10 – 12, 2020

Program Schedule

Thursday, 10-09-2020

10.00am-10.30am	Inauguration
10.30am-11.30am	**Lecture 1: Dr. Sahana Mallya, SRI International, USA**
Title	SynJet ™ – An automated chemistry platform for high throughput reaction screening and optimization
11.45am-12.45pm	**Lecture 2: Dr. Rashmi Nayak, NCL Pune, India**
Title	Luminescent molecular liquids for large area lighting applications

Friday, 11-09-2020

10.30am-11.30am	**Lecture 3: Dr. Shridevi S. Bhat, New York, USA**
Title	How nanotechnology can change the world?
11.45am-12.45pm	**Lecture 4: Dr. Anitha Alanthadka, IIT Roorkee, India**
Title	Sustainable catalytic methodologies towards the synthesis of N-heterocyclic compounds

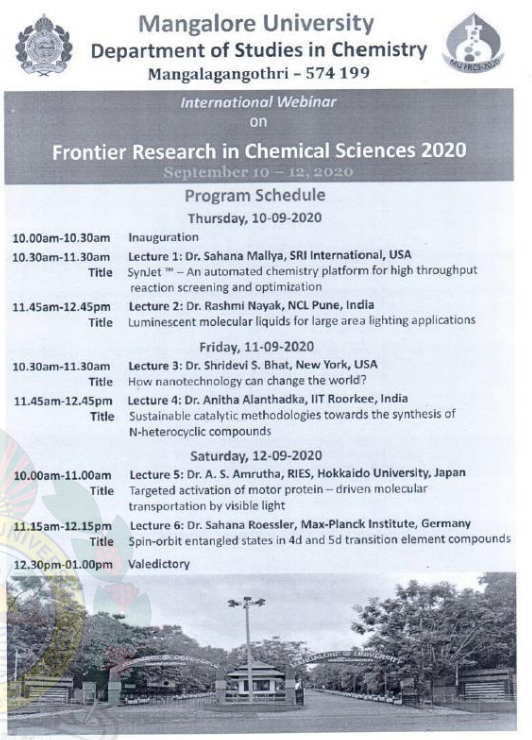
Saturday, 12-09-2020

10.00am-11.00am	**Lecture 5: Dr. A. S. Amrutha, RIES, Hokkaido University, Japan**
Title	Targeted activation of motor protein – driven molecular transportation by visible light
11.15am-12.15pm	**Lecture 6: Dr. Sahana Roessler, Max-Planck Institute, Germany**
Title	Spin-orbit entangled states in 4d and 5d transition element compounds
12.30pm-01.00pm	Valedictory

Mangalore University

Department of Studies in Chemistry

International Webinar on
Frontier Research in Chemical Sciences (FRCS 2020)



Department of Studies in Chemistry, Mangalore University organised an international webinar on Frontier Research in Chemical Sciences (FRCS 2020) during September 10 - 12 2020.

This webinar was very special as all the invited resource persons are Alumnae of the Department of Chemistry, Mangalore University who are actively involved in research in India and abroad. Inauguration of the webinar was done on September 10 2020. Prof. P. S. Yadapadithaya presided over the Inauguration function. After the Inauguration, Dr. Sahana Mallya, SRI International, USA delivered the first lecture on 'SynJet™ – An automated chemistry platform for high throughput reaction screening and optimization. The 2nd lecture of the Day 1 was delivered by Dr. Rashmi Nayak, NCL Pune, India on 'Luminescent molecular liquids for large area lighting applications.

On the Day 2, Dr. Shridevi S. Bhat, New York, USA delivered the first lecture on 'How nanotechnology can change the world?' Subsequently, Dr. Anitha Alanthadka, IIT Roorkee, India presented the 2nd lecture on the topic 'Sustainable catalytic methodologies towards the synthesis of N-heterocyclic compounds' On the Day 3, Dr. A. S. Amrutha, RIES, Hokkaido University, Japan delivered the lecture on 'Targeted activation of motor protein – driven molecular transportation by visible light'. The last lecture of the webinar was presented by Dr.

Sahana Roessler, Max-Planck Institute, Germany on the topic ‘Spin-orbit entangled states in 4d and 5d transition element compounds’.

Faculties of various institutions, MSc students, Guest faculties and other invitees participated in the webinar. Overall around 250 participants benefited from this webinar. Almost all the participants appreciated the organising team for arranging such a wonderful webinar. Many of the participants actively interacted with all the resource persons. After all the lectures, valedictory function was conducted. Sri K. Raju Mogaveera, Registrar, Mangalore University presided over the valedictory function.