

SCIENCE ACADEMIES' EDUCATION PROGRAMME

JOINT SCIENCE EDUCATION PANEL

SEP/RC/September/2018

27 August 2018

Dr Tapas Kumar Adalder
Dept. of Chemistry
Jhargram Raj College
Jhargram 721 507
W.B.

Sub: Refresher Course on "The class room chemistry-concepts and the curiosities" at Jhargram Raj College, Jhargram during 05-19 September 2018.

Dear Dr Adalder,

This has reference to your letter forwarding a proposal and budget for organizing a Refresher Course in Jhargram Raj College, Jhargram. The Joint Science Education Panel of the three Academies will be happy to sponsor and support the Refresher Course. We note that Prof. B.C. Ranu [IACS, Kolkata] will be the Course Director and you will be the Course Coordinator.

- (a) Your budget of Rs 8,22,500/- including travel expenses of RPs (Resource Persons (RPs) travel expenses (i) II tier A/C train fare for persons below the age of 60 (ii) I A/C train fare or air travel by Air India only for Resource Persons over the age of 60) for 35 participants has been approved by the Science Education Panel.
- (b) Please note that only the names of Convener and Coordinator of the Course should be included in brochure/invitation etc. Names of members of the management, organizing committees, patrons etc must not be printed.
- (c) As the Refresher Course is an all India one, it has to be advertised in our journals **RESONANCE** and **CURRENT SCIENCE** (copy of a typical announcement is attached). Please send us a draft of your announcement.
- (d) Applications should be submitted online through a link which will be available in our website. The Course Director and Coordinator will be provided a user-id/password to enable them to view the applications and make the selections.
- (e) Refresher Courses are sponsored and supported by the three National Science Academies - IASc, INSA and NASI. The names of INDIAN ACADEMY OF SCIENCES (BANGALORE), INDIAN NATIONAL SCIENCE ACADEMY (NEW DELHI) and THE NATIONAL ACADEMY OF SCIENCES, INDIA (ALLAHABAD) should therefore be mentioned in all publicity material such as programme sheet, invitation cards, etc.
- (f) The Course should be called "Science Academies' Refresher Course in "The class room chemistry-concepts and the curiosities".
- (g) Please send 4-5 copies of the printed programme when ready.
- (h) Funds for organizing the Course can be sent as an advance by electronic transfer. This can be sent after a bank account is opened and the following details are provided to us:

Indian Academy of Sciences

Murthy, M.R.N.
(Chairman)
Kanharem D.G.
(Co-Chairman)
Arunan, E.
Bachhawat, A. K.
Balakrishnan, V.
Chattopadhyay, Nitin
Dhar, Deepak
Mukunda, N.
Radhakrishnan, T. P.
Rangarajan, Govindan
Saidapur, S.K.
Sankaran, P.
Satheesh, S.K.
Sebastian, K. L.
Sengupta, Pulak
Subramaniam,
Annapurni

Indian National Science Academy

Chattaraj, P. K.
Chaudhuri, Probal
Ghosh, Amit
Goswami, J.N.

The National Academy of Sciences, India

Dimri, V.P.
Khurana, Paramjit
Misra, Gadadhar
Mittal, J.P.

Contact Address

Ravikumar, C.S.
Coordinator
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Indian Academy of
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Indian Academy
of Sciences,
Bengaluru



Indian National
Science Academy,
New Delhi



The National Academy
of Sciences, India
Allahabad

1. Name of the Bank:
2. Name of the Branch:
3. Account No.:
4. Name of the Account Holder
(in the name of Refresher Course);
5. IFSC – code (for Non-SBI accounts)

If necessary, an authorization letter from the Academy to the bank to open the Savings Bank account can be sent to you after we hear from you.

Please go ahead with organizing the Course in consultation with Prof. B.C. Ranu and keep in touch with the Academy about the progress.

Best wishes,

Yours sincerely,



C S Ravi Kumar
Coordinator
Science Education Programme



Science Academies Refresher Course on the Classroom Chemistry-Concepts and the Curiosities
Organised by the Department of Chemistry (UG and PG), Jhargram Raj College, December 06-20, 2018

Day	Date	9.00-9.30 AM	9.30-11.00 AM	11 AM-12.30 PM	12.30 -1.30 PM	1.30-3.00 PM	3.00-3.15 PM	3.15-4.45 PM
1	06.12.18	Breakfast	Inauguration Ceremony	Prof. B.C. Ranu	Lunch Break	Prof. P. Dastidar	Tea break	Prof. B.C. Ranu
2	07.12.18	Breakfast	Prof. P. Dastidar	Prof. B.C. Ranu	Lunch Break	Prof. P. Dastidar	Tea break	Dr. A. Roy
3	08.12.18	Breakfast	Prof. A Ghosh	Prof. S. Bagchi	Lunch Break	Prof. A Ghosh	Tea break	Prof. S. Bagchi
4	09.12.18	Breakfast	Prof. A Ghosh	Prof. S. Bagchi	Lunch Break	Prof. A Ghosh	Tea break	Prof. S. Bagchi
5	10.12.18	Breakfast	Prof. N. Chattopadhyay	Prof. S. Bagchi	Lunch Break	Prof. N. Chattopadhyay	Tea break	Prof. S. Bagchi
6	11.12.18	Breakfast	Prof. S. Sarkar	Prof. N. Chattopadhyay	Lunch Break	Prof. S. Sarkar	Tea break	Prof. N. Chattopadhyay
7	12.12.18	Breakfast	Prof. D. C. Mukherjee	Prof. N. Chattopadhyay	Lunch Break	Prof. D. C. Mukherjee	Tea break	Prof. N. Chattopadhyay
8	13.12.18	Breakfast	Prof. S. Sarkar	Prof. D. C. Mukherjee	Lunch Break	Prof. S. Sarkar	Tea break	Prof. D. C. Mukherjee
9	14.12.18	Breakfast	Prof. S. Sarkar	Prof. D. C. Mukherjee	Lunch Break	Prof. S. Sarkar	Tea break	Prof. D. C. Mukherjee
10	15.12.18	Breakfast	Prof. S. Sarkar	Prof. D. C. Mukherjee	Lunch Break	Prof. S. Sarkar	Tea break	Prof. D. C. Mukherjee
11	16.12.18	Breakfast	Prof. S. Sarkar	Prof. S. Sarkar	Lunch Break	Excursion		
12	17.12.18	Breakfast	Prof. S. Dasgupta	Prof. S. Dasgupta	Lunch Break	Participant Seminar	Tea break	Participant Seminar
13	18.12.18	Breakfast	Prof. A. Basak	Prof. A. Basak	Lunch Break	Prof. S. Dasgupta	Tea break	Prof. S. Dasgupta
14	19.12.18	Breakfast	Prof. A. Basak	Prof. A. Basak	Lunch Break	Prof. S. Dasgupta	Tea break	Prof. S. Dasgupta
15	20.12.18	Breakfast	Prof. A. Basak	Prof. A. Basak	Lunch Break	Valedictory		Valedictory Tea

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Science Academics' Refresher Course on Classroom Chemistry – Concepts and the Curiosities

Organised by Department of Chemistry (UG & PG), Jhargram Raj College
December 06-20, 2018

Venue: Conference Hall, Jhargram Raj College

Report

Science Academics' refresher course on the **Classroom Chemistry – Concepts and the Curiosities** had received an overwhelming response among the teachers and students community of the District, Jhargram and also across the country at large. The course had a great success based on the overall response from the participants. Many of the participants mentioned in the valedictory session that while the HRDC of the UGC involve many resource persons assigned for a single lecture without much scope of interactions, the Science academies refresher course involve Academy fellows/reword teachers for multiple talks with a full scope of interactions. Some of the participants from non-chemistry back round confesses that they had learned many things through the course. These facts clearly indicated the success of the course.

The course was started on 06th of December, 2018 with a short inaugural session and the Principal,

Debnarayan Roy and the Head of the Chemistry Department, Dr. Prasanta Patra gave welcome address for the participants. The Course Director, Prof. B. C. Ranu discussed about the activities of the Indian Academy of Sciences and importance of Science education programme in the country. He also emphasised the importance of organising the Science Academies Lecture workshop and Refresher Course in remotely located colleges. The Course Coordinator, Dr. Tapas Kumar Adalder highlighted a statistic on the number of Refresher Courses had already been organised and to be organised across the country. He had also mentioned the poor number of Courses organised in the state West Bengal in compared to the other states of the country.



Figure 1: Different Moments of the inaugural session

There are a total of fifty two lectures delivered by twelve resource persons. The technical session of the course was started with the lecture of Prof. B. C Ranu, the Course Director on Green Chemistry. Prof. Ranu delivered total three lectures in the course and discussed the impacts of the green chemistry and its importance in the academic curricula for sustainability. He had covered basic


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principles of green chemistry and green chemical techniques commonly used in the laboratory. The main focus of his talk was the use of water as reaction media, solid state reactions and green catalyst. He had showed a number of literatures reported examples and future direction of the field.



Figure 2: Lecture by the Course Director and Prof. P. Dastidar

Nevertheless, he requested the participants to start at least small research projects on green chemistry and ask to incorporate green practical in both the UG and the PG laboratory.

Prof. Parthasarathi Dastidar also delivered three lectures and he mainly concentrated on the concept of supramolecular chemistry and crystal engineering. Prof. Dastidar discussed various types of supramolecular interactions namely hydrogen bonding, halogen bonding, pi-interactions and underlying

principles of the supramolecular chemistry in his first lecture. He had also talked on the crystal engineering and supramolecular synthons. He had also presented the application of the concepts of

crystal engineering in designing supramolecular gels, metal organic frameworks (MOFs) and coordination polymers. Prof. Asutosh Ghosh delivered four lectures in the course. He discussed principle of various photoelectron spectroscopic techniques (XPS and UPS) and its applications in chemical diagnosis. He also talked about cyclic voltametry as electroanalytical techniques. Prof. Sanjib Bagchi had delivered six lectures in the course and discussed about the various spectroscopic techniques, their principles and applications. He mainly focussed on the IR, Raman and



Figure 3: Lecture by the Resource Persons of the Course

NMR spectroscopy extensively. Prof. Nitin Chattopadhyaya delivered six lectures in the course and his first talk was motivational. This talk was based on the quotations of the legendary scientific


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figures and other historical personalities. Almost all the students of the Department of Chemistry had attended this session. The theory of UV-Vis and fluorescence had been covered in his rest of five technical talks. Prof. Chattopadhyay had emphasis on the misconceptions and misuse of various spectroscopic vocabularies namely fluorescence quantum yield, fluorescence anisotropy, isobestic & isosbestic point etc. He had also presented some of his research result on the drug binding and delivery by photoluminescence techniques. Prof. Sabyasachi Sarkar delivered ten lectures on the course and he mainly concentrated on the bioinorganic chemistry and role of carbon material for drug delivery across blood brain barrier. He had started with the definition of life and slowly moved into the evolution of the life process in the context of Bioinorganic Chemistry. He had talked on the mineral origin of life and role of various metallo-enzymes for certain biological functions and mechanistically explain their mode of actions. In his last two talks, he had talked about the *Facultative enzyme, fish odour syndrome and preparation of low cost carbon material* to combat against dengue and other parasite born diseases. He had also showed that lost cost carbon materials as a drug delivery system. Prof. Dulal Chandra Mukherjee delivered six lectures; three lectures were dedicated for the statistical mechanics and rest three for the quantum mechanics. He lucidly talked

about the basic principle of both the topics amalgamated with lots of untold scientific stories. Prof. Swagata Dasgupta had delivered six lectures and her talks mainly concentrated on the basics of bio-physical in general and protein chemistry in particular. She talked about the amino acids, determination of isoelectric points of di- and tetra peptide, structure of protein, protein folding, protein denaturation and enzyme catalysis.



Figure 4: Excursion

Prof. Amit Basak covered the important misconceptions persisted in stereochemical principles and CD/ORD spectroscopy. He had used extensively the molecular models to convince the participants and the students. Prof. Achinta Kumar Sarkar delivered only two lectures. His first lecture was mainly related to the use of molecular orbital methods in explaining various organic chemical reactions and second one on the qualitative organic analysis. The coordinator of the course also arranged one special invited lecture (after consultation with the Course Director) by the Dr. Anagana Roy. She had delivered one talk on the computational biology on bio-molecular conformation.

The **Chilkiharh Kanak Durga** Heritage Biodiversity sites had been chosen as the place for excursion by the coordinator of the course on 12.12.2018. This site was recognised as 10th biodiversity place in the country with a large number of plant and bird species. The participants had also visited Chilkiharh Palace and the Dulung River. The presentation by the participants had been


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scheduled on 17.12.2018. The coordinator had selected twelve presentations randomly on various topics and the session was chaired by Dr. Subho Manna, HOD, Department of Zoology, Jhargram Raj College. The valedictory session was arranged during post lunch session on 20.12.2018. Prof. Achinta Kumar Sarkar and Dr. S. Manna had chair the valedictory function. Many participants had shared their views and possible impact of this course in their teaching/learning career. A copy of the Inorganic Chemistry (6th edition) by Mark Weller, Fraser Armstrong, Jonathan Rourke, Tina Overton and a copy of Modern Methods of Organic Synthesis by William Carruthers and Iain Coldham. A certificate had also been issued signed by the Course Director and the Course Coordinator for all the participants. In the feedback form, all the participants requested the Academy to issue a letter of approval of Academies Refresher Course by the UGC for mass popularity of the course. All the participants became emotion after sending fifteen days together during the course and a WhatsApp group had been created for future correspondence.



Figure 5: Different Moments of the Course

Weller, Fraser Armstrong, Jonathan Rourke, Tina Overton and a copy of Modern Methods of Organic Synthesis by William Carruthers and Iain Coldham. A certificate had also been issued signed by the Course Director and the Course Coordinator for all the participants. In the feedback form, all the participants requested the Academy to issue a letter of approval of Academies Refresher Course by the UGC for mass popularity of the course. All the participants became emotion after sending fifteen days together during the course and a WhatsApp group had been created for future correspondence.



Figure 6: Group of Participants in Jhargram Raj College premises after valedictory function


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List of Participants

Local			
Sl. No	Name	Affiliation	Institution
01	Dr. Anshuman Bej	Assistant Professor	Jhargram Raj College
02	Dr. Nabakumar Bera	Assistant Professor	Jhargram Raj College
03	Dr. Sanchayiata Adikari	Assistant Professor	Jhargram Raj College
04	Dr. Susovan Mondal	Assistant Professor	Jhargram Raj College
05	Dr. Tarun Mistri	Assistant Professor	Jhargram Raj College
06	Dr. Pradeepta Ghosh	Assistant Professor	Jhargram Raj College
07	Dr. Prasanta Patra	Assistant Professor	Jhargram Raj College
08	Dr. Dipen Biswas	Assistant Professor	Jhargram Raj College
09	Dr. Abhay Day	Assistant Professor	Jhargram Raj College
10	Dr. Arabinda Samanta	Assistant Professor	Jhargram Raj College
Outstation			
11	Dr. John Prakash	Assistant Professor	Department of Chemistry, School of Basic and Applied Science, Central University of Tamil
12	Dr. Bholanath Pakhira	Assistant Professor	Dept. of Chemistry, Sister Nibedita Govt. General Degree College for Girls', Hastings House, Alipore, Kolkata
13	Dr. Indranil Chakraborty	Assistant Professor	Kharagpur College, Kharagpur, Dist: Paschim Medinipur
14	Dr. Sutapa Ray	Assistant Professor	Department of Chemistry, Government General Degree College, Keshiary, Medinipur
15	Dr. Koushik Chandra	Assistant Professor	Midnapore College, (Autonomous), P.O.-Midnapore, Dist.-Paschim Medinipur
16	Dr. Gobinda Prasad Sahoo	Assistant Professor	Midnapore College, (Autonomous), P.O.-Midnapore, Dist.-Paschim Medinipur
17	Dr. Soumitra Mondal	Assistant Professor	Department of Chemistry, Panskura Banamali College Purba Medinipur
18	Dr. Sukesh Patra	Assistant Professor	Govt. General Degree College, Kharagpur-II, Madpur, Paschim Medinipur
19	Dr. Sunil Kumar Bhanja	Assistant Professor	Govt. General Degree College, Kharagpur-II, Paschim Medinipur
20	Dr. Kalipada Sau	Assistant Professor	Department of Chemistry RKMR College, Narendrapur south 24 pgns, Kolkata 700103
21	Dr. Susovan Bhowmik	Assistant Professor	Bankura Sammilani College, Kenduadihi, Bakura


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22	Dr. Palash Setua	Assistant Professor	Pingla Thana Mahavidyalaya
23	Dr. Swarna Kamal Samanta	Assistant Professor	Govt. Gen. Degree College, Dantan-II, Paschim Medinipur
24	Dr. Tapanendu Kamilya	Assistant Professor	Narajole Raj College, Mirbazar, Nabinabag, P.O.-Midnapore, Dist.- Paschim Medinipur
25	Dr Abhinandan Rana		Garhbeta College, Habibpur P.O.-Midnapore Dist.-Paschim Medinipur
26	Dr. Madhusudan Bera	Assistant Professor	Govt. Gen. Degree College, Dantan-II, Paschim Medinipur,
27	Dr. Biplab Maity	Assistant Professor	Govt. Gen. Degree College, Dantan-II, Paschim Medinipur
28	Ms. Chabi Pal	Research Scholar	Ex-TIFR, Hyderabad
29	Ms. Sudipta Mondal	Research Scholar	Jadavpur University, Kolakata
Student Participants (Registered)			
30	Miss Tashnim Ria	M.Sc. (SEM IV)	Jhargram Raj College
31	Miss. Sohini Sarkar	M.Sc. (SEM IV)	Jhargram Raj College
32	Miss. Bijali Karmakar	M.Sc. (SEM IV)	Jhargram Raj College
33	Miss. Atashi Ghosh	M.Sc. (SEM IV)	Jhargram Raj College
34	Miss. Bidipta Dey	M.Sc. (SEM IV)	Jhargram Raj College
Student Participants (Non-registered/Volunteers)			
35	Mr. Saikat Pal	M.Sc. (SEM IV)	Jhargram Raj College
36	Mr. Tapas Mahata	M.Sc. (SEM IV)	Jhargram Raj College
37	Md. Sk samsulghaus	M.Sc. (SEM IV)	Jhargram Raj College
38	Mr. Ritabrata Bera	M.Sc. (SEM IV)	Jhargram Raj College
39	Mr. Debabrata Mallik	M.Sc. (SEM IV)	Jhargram Raj College
40	Mr. Susanta Paul	M.Sc. (SEM IV)	Jhargram Raj College
41	Mr. Soumen Dey	M.Sc. (SEM IV)	Jhargram Raj College
42	Mr. Prakash shit	M.Sc. (SEM IV)	Jhargram Raj College
43	Mr. Animesh Dash	M.Sc. (SEM IV)	Jhargram Raj College
44	Mr. Rick Sannigrahi	B.Sc. 3 rd year	Jhargram Raj College
45	Mr. Sajal Karak	B.Sc. 3 rd year	Jhargram Raj College


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