



DST-FIST FUNDED CENTRAL INSTRUMENTATION FACILITY JAI HIND COLLEGE

March, 2018
NEWSLETTER 1

OUR VISION

To promote learning & innovation through creative, meticulous & ingenious use of scientific tools for research.



From the Principal's Desk

The world is making tremendous progress in Science & students of Jai Hind have always had an explorative edge. Research & innovation are now commonplace among our undergraduates due to painstaking efforts of our teacher mentors. There is hence a growing need to build up research infrastructure & make it available to students so as to traverse new horizons in science & keep up with global standards, in line with our college mission.

The Central Instrumentation Facility is a longstanding dream which has finally been realized. We envision to add more instrumental facilities & throw it open to researchers ensuring unhindered progress. CIF is a stepping stone towards bridging the gap between academia & industry leading to collaborative work to take India in the forefront of groundbreaking scientific research.



About Central Instrumentation Facility

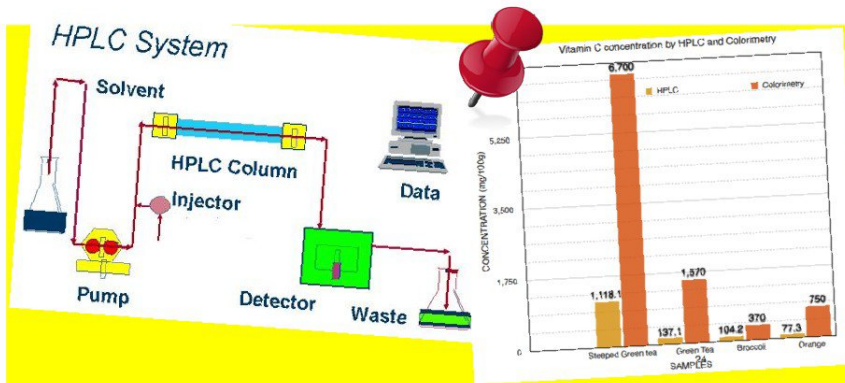
Jai Hind College added another laurel to its legacy as it was granted the FIST funding by Department of Science & Technology, Government of India in July 2015. Funds were received under various heads to develop infrastructure for research & for improving pedagogic technology. The quest to establish Jai Hind as a Centre for Research would not have materialized without the generous & philanthropic contribution from visionaries like Mr. Mitesh Desai, Director LCGC Chromatography Solutions Pvt. Ltd.

The Central Instrumentation Facility was inaugurated on 14th July, 2015 by the then Vice Chancellor Dr. S. Deshmukh & has since been used dedicatedly by faculty members and students alike. Sophisticated analytical instruments like HPLC, Spectrofluorimeter, FTIR, DSC, PCR, Gel documentation, Fluorescent microscope etc. have been added. We endeavour to add to our existing infrastructure and continue to generate high impact research output in future.

Organizational Structure

Principal- Dr. A.G. Wadia
DST-FIST Co-ordinator- Dr. Sangeeta Parab
CIF Lab in-charge- Mr. Gokul Ganesan
Committee Members-
Dr. Madhura Ghayal
Dr. Manisha Deshpande
Ms. Niloufer Kotwal
Dr. Devangi Chanchad





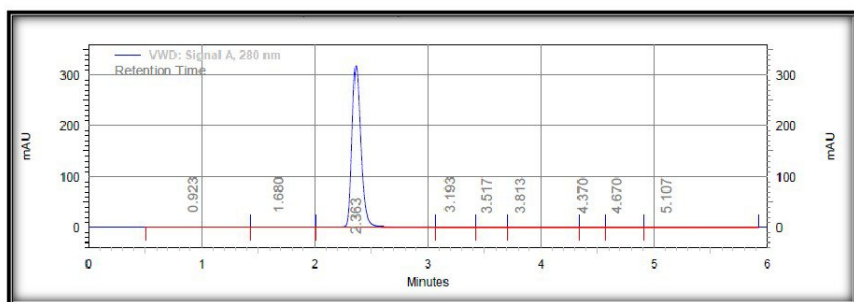
Agilent HPLC Infinity Series is one of the most robust analytical instruments in the Central Instrumentation Facility & finds a wide variety of applications in biological & chemical sciences. Ms. Nissey Sunil has guided two projects from the Dept. of Biotechnology titled "**Comparative study of methods for detection of Vitamin B₁₂**" & "**Estimation of ascorbic acid by HPLC & colorimetry**". The key findings of the projects are- bioassay of cyanocobalamin was found to be more sensitive than standard HPLC methods for estimation, however HPLC method was more selective in estimation of ascorbic acid as compared to colorimetric method using DNPH.

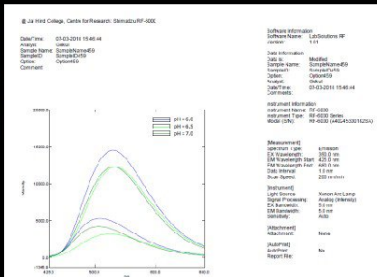
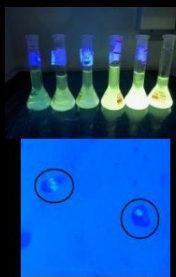
Ms. Dipanwita Ghoshal, a Ph.D. scholar under Dr. Sangeeta Godbole has used HPLC for separation of plant metabolites and characterized them by running commercially available standards on the same column.

Ms. Ragni Vora, a Ph.D. scholar under Dr. Ambika Joshi was working on estimation & extraction of L-DOPA from plant sources. The group has published their findings in 3 high impact journals.

HIGHLIGHTS OF NEWSLETTER 1:

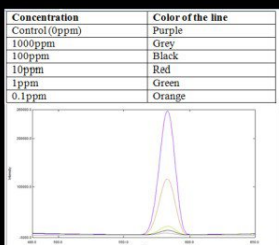
- Ragni Vora & Dr. A.N. Joshi have published their findings in *World Journal of Pharmaceutical & Medical Research*, *Annals of Plant Sciences & International Journal of Bioassays*.
- Jatin Kadge was awarded University level prize at **Avishkar Research Convention** held by Univ. of Mumbai.
- Divya Goel & Avni Rao were awarded the **FIRST PRIZE** for their research work at Jigyasa Research Meet, K.C. College.
- Aanchal Balse, Srika Amin, Neha Kumari, Aradhana Mishra & Somya Bothra stood **SECOND PRIZE** at Jigyasa Research Meet, K.C. College.
- The research carried out by Pooja Bhargude, Arti Pujari & Farheen Shaikh were reviewed & accepted for presentation at the 30th RSM organized by Indian Chemical Society (Mumbai Branch) & at the UGC-SAP sponsored National Conference on Recent Advances in Chemical Sciences. The abstracts have been published in their respective conference proceedings.





The PG students of Dept. of Chemistry, Pooja Bhargude, Arti Puari & Farheen Shaikh under the guidance of Mr. Gokul Ganesan & Dr. Sreela Dasgupta have worked on project titled "Synthesis of a selective water soluble chemosensor for aluminium as a potential fluorescent probe for bioimaging of DNA". The synthesized molecule gave a green emission with aluminium (III) ions upon excitation at 350 nm wavelength. The fluorescent probe was then used in bioimaging of DNA from the mitotically active cells of onion root tip. The findings were presented as a poster in a National Conference at the Univ & 30th RSM, Jai Hind College.

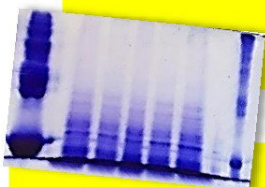
A group of UG students from the Dept. of Life Sciences, Divya Goel & Avni Rao worked on a project titled "Effect of heavy metals on the bioluminescence of Photobacterium leognathi" under the guidance of Ms. Niloufer Kotwal. They optimised conditions for the microorganism to act as a biomarker for heavy metal contamination in water. They presented their work at Jigyasa research meet & won the first prize.



MOU

Jai Hind College has an MoU with LCGC for sample testing & sessions by experts in the field of chromatography along with demonstration sessions.

The Dept. of Microbiology has an MoU with Nirmala Niketan College of Home Science whereby M.Sc. students are guided by faculty of Microbiology of JHC. The association has resulted in more than 20 projects. Mr. Ravi Kuril completed a research project on "Development of Chitosan nanoparticle based biofilm with antimicrobial properties" in 2015 & Ms. Priyanka Lulla completed a project entitled "Development of Vitamin B12 enriched food products" under the guidance of Dr. Madhura Ghayal. Remi cold centrifuge & Equitron anaerobic jar from the central instrumentation facility were extensively used for the project work.



Bioera Gel documentation instrument & the Gel-rocker have found profound application to biologists working on separation of biomolecules. Dr. Kruti Pandya from the Dept. of Biotechnology has engaged as many as 8 students in the year 2016-17 & 10 students in the year 2017-18 in research projects for semester VI. Dr. Pandya has also collaborated with Bioera for conducting a hands-on training workshop on Gel electrophoresis & Gel documentation for Jai Hind students. Additionally Ms. Nissey Sunil from the Dept. of Biotechnology & Ms. Niloufer Kotwal from the Dept. of Life Sciences have used the Gel rocker for staining, destaining of SDS PAGE & have also made extensive use of Gel documentation to visualize fluorescent bands of the separated biomolecules for their doctoral work.





Heidolf Rotary Evaporator has been used extensively by the **Dept. of Botany & Biotechnology** to concentrate extracts of thermolabile compounds under reduced pressure. Dipanwita Ghoshal has trained on the instrument & has also conducted a workshop for undergraduate students on the instrumental technique.

The **Agilent FTIR Cary 630** is one of the pioneering additions to the advanced spectroscopic instruments. With diamond ATR accessory, FTIR analysis has become fast & less cumbersome with respect to sample preparation. The technique has come in handy for students of the **Dept. of Chemistry** who used it to establish functional group conversion at the end of a reaction.

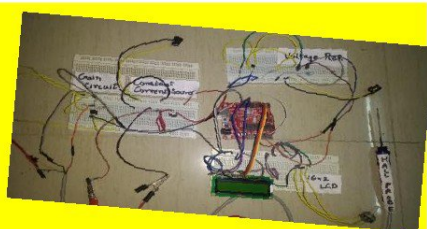
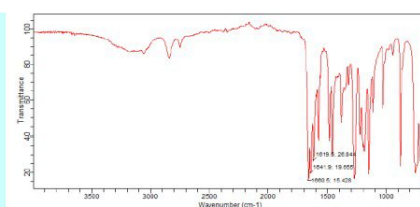
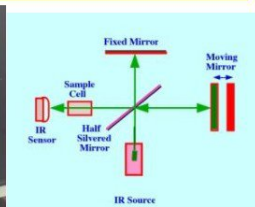
The technique has also been used by Ms. Niloufer Kotwal from the **Dept. of Life Sciences**, who works on polymer degrading microorganisms. The library method allows matching the polymer to a pre-fed library & helps in monitoring extent of degradation.

Industrial Project

The **Dept. of Chemistry** completed an **Industrial Project** titled "**Purification of Quinoline**" for **Chempure Limited** using **Heidolf Rotary Evaporator & generated a modest revenue.**

Agilent Technologies

MSC_project_Salicylaldehyde
 Scans: 32
 Method Name: Data collect method
 User: admin
 Date/Time: 02/07/2018 4:30:38 PM
 Range: 4000 - 650
 Application: Hage-Sentzel
 Status: Good
 Location: C:\Users\Public\Documents\Agilent\MicroLab\Results\MSC_project_Salicylaldehyde_2018-02-07T16:30:38.a2r



Magnetostriiction Measurement Setup has been indigenously developed by Dr. Sharad Dange, from the **Dept. of Physics** using **Keithley Nanovoltmeter**. A software has been developed for logging and processing of data with a sensitivity of 1 microstrain & error of upto 5%. The data acquired for magnetic samples have been presented at International Conference on Advanced Materials Development & Performance in Dept. of Physics SPPU, Pune & in DAE SSPS, BARC Mumbai.

Mr. Jatin Kadge indigenously designed Gaussmeter using a Single Crystal GaAs Hall Probe to measure magnetic field intensity. The project was undertaken under the guidance of Dr. Sharad Dange. The project was awarded University level prize at **Avishkar Research Convention** held by Mumbai University.

WORKSHOPS/COURSES CONDUCTED:

- Hands-on training for ROTAVAP, Binocular Microscope, Karl Fischer autotitrator, probe sonicator on 29th March 2016.
- One day workshop in collaboration with Shimadzy on Spectrofluorimeter & DSC on 27th April, 2016.
- Training workshop on Column chromatography, fraction collector & Rotavap on 7th April, 2017.
- Two Day workshop in collaboration with BIOERA India Ltd. on GEL electrophoresis & GEL Documentation.
- One Day Hands-on training on "Interpretation of FTIR Spectrum" on 2nd December, 2017.
- Workshops in collaboration with Lady Tata Memorial Trust: Molecular biology workshop on "Proteomics" by Dept. of Microbiology; Neuroscience workshop by Dept. of Life Sciences titled "Perception v/s recognition" on 9th & 10th of December, 2016; Workshop on "Techniques & applications in immunology" by Dept. of Biotechnology.
- "Signature of Molecules" spectroscopy workshop conducted by Dept. of Chemistry on 15th & 16th Sept. 2017