University of Pune

Board of College and University Development

AVISHKAR-2006-07

A Success Story

Published by

Board of College and University Development, University of Pune

AVISHKAR-2006-07

Patron

Dr. Narendra Jadhav

Advisory Committee

Prof. Pandit Vidyasagar (Chairman)
Dr. S. B. Nimse
Dr. Dilip Ukey
Dr. Arun Adsool
Dr. A. S. Padalkar
Dr. V. B. Gaikwad
Dr. K. K. Deshmukh
Dr. Raosaheb Shinde
Prof. V. B. Asgekar
Prof. P. W. Wani
Prin. C. N. Rawal
Dr. Sanjiv Sonawane
Dr. Anil Lachke
Dr. K. C. Mohite (Co-ordinator)

Coordination Committee

Prof. Pandit Vidyasagar (Chairman)
Dr. Anil Lachke
Prof. S. D. Aghav
Dr. M.A. More
Prof. R. M. Chaudhari
Prof. T. B. Khairnar
Prof. Ms. Nilima Pawar
Dr. B. S. Balapgol
Prof. Arun Gangarde
Prof. R. S. Ladda
Prof. Appa Rao
Prof. G.V. Garje
Prof. Jayashree Deshpande
Dr. Anil Dusane
Dr. K. C. Mohite (Co-ordinator)

FOREWORD

Dr. Narendra Jadhav
Vice-Chancellor

India has been emerging as an economic powerhouse. In order to facilitate and support the economic development and indeed sustain the momentum of our economic growth, we need trained manpower. We therefore need to nurture and nourish creative minds who would generate innovative ideas and transform them in the right action. This would be imperative in our quest to regain our place of pride among the comity of nations.

His Excellency, Governor of Maharashtra, Shri. S.M. Krishna has initiated a novel research project competition named Avishkar in the year 2006. This activity, unique in its nature, is being implemented through Board of College and University Development of University of Pune.

I am delighted to state that University of Pune has implemented the activity in the best possible manner. University of Pune has taken special efforts to increase the participation of the talented students from rural and urban areas. Special efforts were taken to organize regional competitions, organize special training to these students and provide them necessary help and guidance to enhance their abilities to present their work in an effective manner. This activity has generated a lot of enthusiasm amongst students and the participation is ever increasing. University of Pune has a long tradition of research and is internationally acclaimed for the same. Keeping this tradition, University of Pune has won the overall championship at the State level Research Competition, Avishkar-2006 competition held at Nagpur. This year we have made further efforts to increase the participant even from Adivasi areas and I am sure that students of University of Pune would do well in the year 2008 also.

I wish them all the success and compliment the efforts made by Association of Indian Universities, with support of all the Indian Universities along with the

AVISHKAR - A Unique and Novel Activity

Dr. Pandit Vidyasagar
Director, BCUD

In the era of globalization, Higher Education has to face many challenges. This includes the stiff competition from the foreign Universities. Indian Universities would have to compete at the international level and as a result inculcate innovative thinking amongst the students and teachers. The aim would not be achieved unless teachers and students are engaged in a creative activity. The routine methods and practices used in implementing syllabi do not provide enough scope for such an endeavor. It has been accepted world wide that engagement of teachers and students in research activities would certainly expose them to the environment which will help in developing a right kind of attitude for exploration. Exploration is the most effective way of learning as it includes components such as thinking, making observations, analysis, drawing conclusions from the data and understanding a particular principle through this exercise. On this background if Students are provided an opportunity to undertake projects and are allowed to conduct study of their own, it would help them to develop the practice of thinking beyond the text book material.

Avishkar, a research project competition initiated by Hon'ble Chancellor Shri. S.M. Krishna, is a novel idea which provides a suitable platform for the students to show their talent, expertise, innovative thinking and understanding of the things in a holistic manner. The activity would certainly provide encouragement to the students and would also keep teachers on their toes to cope up with the queries of the students. Certainly, Avishkar has proved to be the activity which would help Universities to link higher education to the needs of industry and make it more relevant. It would also help students and teachers to remain vibrant, up-to-date and at par with the international community. If India has to face the global challenges in a most effective manner such activities like Avishkar should be spread to the remotest colleges in the University and the students from remote areas should be brought to the main stream. University of Pune has taken up initiative to reach to the maximum number of students by organizing regional competitions at four different places in Pune, Ahmednagar and Nashik Districts in the year 2006-07 and at seven places in the year 2007-08. University of Pune is also organizing training programmes for the selected students before they compete at the University level.

Infact Avishkar would form a very important component of the larger aim and that is the development of Entrepreneurship amongst the students. As a part of this scheme, University of Pune has taken initiative to promote the research atmosphere in the affiliated colleges by providing financial assistance to the tune of five crores in the year 2006-07. The same would be enhanced to eight crores in the year 2007-08. A large number of teachers have undertaken research projects and are engaged in pursuing various research problems under all faculties.

This novel initiative of funding research projects would boost the standard of higher education at college level. University of Pune has also organized a two day Research Conference `Innovation 2007' for University and College teachers, first of its kind, through Board of College and University Development on 19th and 20th November, 2007. Further University of Pune plans to integrate the project activities undertaken for Avishkar, research projects being carried out by college and University teachers and interaction of these researchers (both students and teachers) to the Industry by organizing a road show. This would help in identifying potential ideas which could be explored for commercial exploitation.

In past two years we have been successful in reaching almost 50,000 students and our aim is to reach maximum number of students in the coming year. I would appeal to all students, teachers, HOD of University Departments and Principals to participate in this activity and make it a great success.

AVISHKAR-2006: *A Success Story*

Dr. K. C. Mohite
Coordinator Avishkar, and
OSD, BCUD

It gives me great pleasure to write the success story of the first-ever state level research project competition AVISHKAR-2006. I am thankful to Hon'ble Vice Chancellor, **Dr. Narendra Jadhav** and Director, BCUD **Prof. Pandit Vidyasagar** for giving me an opportunity to coordinate and represent University of Pune at the state level research festival AVISHKAR 2006. When Prof. Pandit Vidyasagar mooted the idea of coordinating "AVISHKAR", I was keen and eager to take on the responsibility of conducting a novel programme. Earlier, I had an experience of being the Area Coordinator, Maharashtra (Western Region) for the Talent Search Programme. This was organized under the auspices of the Indian Physics Association, BARC (Mumbai) in association with Department of Science and Technology, Govt. of India, Delhi in Celebration of the completion of 100 years of Einstein's work on Relativity. This programme included the presentation of innovative research projects by the students and teachers.

AVISHKAR was the very first competition to be organized by the University and obviously there were no clear guidelines and rules of the competition regarding the category and number of participants to be allowed in each category. We designed the programme for Pune University under the guidance of Prof. P. B. Vidyasagar in order to get quality projects from the UG/PG and Research students.

ZONAL LEVEL COMPETITIONS

We decided to conduct the zonal competitions at various stages namely District/Zonal level and University level. We prepared an innovative poster with selected Photos and schedule of the competition. At the same time we tried to convince the Teachers, Principals and Authorities of Pune University to make this programme successful. We were quite happy to receive encouraging response from all the Colleges including professional Colleges such as Engineering, Medical, and Pharmacy etc.

UNIVERSITY LEVEL COMPETITIONS

The University level AVISHKAR competition for four zones was organized on 2nd and 3rd January 2006. The undergraduate students from rural area were found to participate enthusiastically in this event. The quality of projects presented by the Departments situated on the Pune University campus in PG and Research level Category, were worthy of special mention. Mr. Amol Kadam, a UG student from VIT college of Engineering, presented an outstanding project on Novel Milk Machine.

Some of the projects, owing to their interdisciplinary nature, were reshuffled to other categories as per the theme of the project. For example a project on Energy Management by Ms. Asmita Kshirsagar was shifted from Engineering and Technology category to Management, Similarly a project on Virtual Key board by Salil Bidaye from Pure Science was shifted to Engineering and Technology. This strategy bore instead fruit as both the projects received first prizes in their respective categories.

All the projects were examined by renowned experts/ Judges and the Prizes were distributed by the Hon'ble Vice Chancellor **Dr. Narendra Jadhav**; He congratulated all the prize winners and gave best wishes for the New Year 2007. **Dr. Pandit Vidyasagar** guided the prize winners and made an appeal to win the first ever Overall Championship trophy of AVISHKAR-2006.

TWO -DAY WORKSHOP

After the completion of the second round, we decided to arrange a two-day workshop for selected students on the campus of University of Pune. These students were given an opportunity to interact with renowned Scientist and experts in their respective fields. The students could clear their doubts by interacting with experts who gave them important and much needed suggestions for improving their presentations. The students followed it up by incorporating the suggestions. During this, period we received a letter from Nagpur stating that there can be two entries for each category at UG/ PG/ and research level. This gave an opportunity to accommodate four more projects in Pune University team.

Special mention must be made of the atmosphere, which was conducive to raising the level of AVISHKAR to the spectacular. I remember a quote by Einstein " **QUALITY CANNOT BE ACHIEVED WITHOUT FREEDOM"**. The Vice Chancellor and Director BCUD gave me full freedom during the days of AVISHKAR-2006. The selection of a few additional projects from the list of participants, who had presented but were not selected by the judges at the University level competition, was really a challenging task. As I was observing all these projects from the beginning along with the experts, we selected the following projects in consultation with Prof. Pandit Vidyasagar.
i) Energy Management by Asmita Kshirsagar, ii) Virtual Key board by Salil Biday, iii) Bacteria phage: Ms. Shubhada Bhosale, iv) Sustainable Agriculture: Vishwanath Patil. **Needless to mention all these projects received prizes at the State level.**

STATE LEVEL COMPETITION

With sufficient preparation and confidence, we left Pune to reach Nagpur for the final presentation of our AVISHKAR. The words from Hon'ble Vice Chancellor **"loser in the competition will be shifted to other University"** gave a great impact and reflected rightly in the student's performance. We started our journey with a goal of securing the first prize in all categories and reached the MLA guesthouse. We had a meeting with the organizers, Directors and Coordinators, regarding the rules of the competition. As this was the first competition, organizers were framing the rules of the competition. The posters took their respective places; I found that the posters needed to be modified according to the norms of the competition. We worked late in the night to modify the posters and got it printed.

The next day morning the Inauguration function was organized at 10.00 am, where the Vice Chancellors, of all Universities, were suppose to meet. I met with our Hon'ble Vice Chancellor who encouraged our young team members. Subsequently, the participants explained their revised projects. Further Hon'ble Vice Chancellor made all the efforts to take **Hon. Chancellor, Shri S.M. Krishna** to our projects particularly NOVEL MILK MACHINE. The Hon'ble Chancellor appreciated the project work that certainly boosted our student's confidence.

The competition started and the Judges came to the desk for evaluating the posters. Our students were very confident, and they looked very impressive due to **special blazers** provided by Pune University. I was extending moral support to each and every participant form Pune University. After the poster presentation participants attended the Guest lecture followed by Bhajan dedicated to Rashtrasant Tukdoji Maharaja. There was a great effort from the Lalit Kala Kendra students to entertain all, but in fact everyone was interested in the Results. Out of 17 projects 13 were selected for oral presentation and now it was the final round of the Competition.

I encouraged those students, who were not successful in being selected in the poster session, to help the other participants to prepare and to work as one team. Again all the presentations were reviewed and asked the participants to highlight the importance of their research work in the present scenario and achievements, awards etc. The rewards and achievements gave a great impact on the presentation. As the results started coming out; I was happy to note that we were leading in almost all categories. The hall was full with cheers and echoes as University of Pune had won 10 (6 First and 4 second) prizes with 4 Trophies (2 shared by other universities, an individual and a big championship trophy).

Once again I am indebted to Hon'ble Vice Chancellor, **Dr. Narendra Jadhav** and Director, BCUD, **Prof. P. B. Vidyasagar** for giving me this grand opportunity to prove my mettle as a successful coordinator and Team Manager in AVISHKAR-2006. The success would not have been possible without the cooperation of all, the authorities of University of Pune, Principals of the Colleges, Heads of the Department, Zonal Coordinators, experts, Judges, staff from BCUD office, those who helped directly or indirectly and of course student participants who worked very hard to achieve the goal.

I wish all the best to all the student participants and winners of AVISHKAR-2006.

First Prize at Research level in Humanities, Arts and Languages

PERSONALITY CORRELATES OF CREATIVITY: A STUDY USING EYSENCKIAN MODEL AND THE FIVE-FACTOR MODEL

Vivek Mohan Belhekar, Ph.D.
Department of Psychology, University of Pune

ABSTRACT

Amabile (1982) opines that creativity can be regarded as a quality of the products or response judged by appropriate observer and can also be regarded as a process by which something so judged is produced. In formal testing following components of creativity are assessed (Torrance, 1974, 1990. Creativity was considered as divergent thinking ability (Guilford, 1967). According to Guilford, potential for creative production is an important part of intelligence. Findings regarding the Triangularity hypothesis based on several reviews have concluded that creativity is significantly related to IQ up to about IQ 120. Beyond IQ 120, it becomes independent of IQ.

Trait theories of personality are important personality theories. Eysenckian model of personality and Five-Factor Model of Personality are two current models of personality. Eysenck (1995) suggested that personality dimension of psychoticism (P) is related to creativity. McCrae (1987) has suggested that the dimension of openness of experience of Five-Factor Model is uniquely related to creativity.

In this project A Sample of two groups of creatives are be compared with normal for total N = 200 in the age between the range 35 to 55 yrs. The tools used for the work are EPQ-R (Eysenck, Eysenck and Barrett, 1985) and NEO-PI-R (Costa and McCrae, 1992) translated into Marathi (Lodhi et al, 2002). Also a short version, the NEO-FFI of NEO-PI-R is used. For the Culture Fair Intelligence Test the reference Cattell & Cattell, 1960 is used. The TTCT (Torrance Test of Creative Thinking, 1990) is translated into Marathi.

Overall there is good support for Eysenckian model and Five-Factor Model. It provides a data on cross-cultural validity of models. Normative data has been provided. Further studies are required to know differential weight of factors in predicting creativity in these and other areas of creative achievement.

First Prize at PG level in Commerce Management and law

ENERGY MANAGEMENT

Asmita Kshirsagar , M.Tech. Energy Studies,
School of Energy Studies ***U****niversity of Pune,*
Pune – 411007

ABSTRACT

Looking at the present Energy Scenario, the Fossil fuels are depleting day by day, the increase in Electricity tariff, Increasing pollution, Global Warming, and great difference in Demand and supply of the power. In Maharashtra we are generating 9000 MW against the demand of 14700 MW that means there is gap of 5700 MW, which has forced us to the Load shedding. Load shedding has got the different solutions like such as Generation capacity addition, use of Renewable Energy Sources

Generation capacity addition it takes 3- 4 years for a power plant to start generating. And Renewable Energy is a supporting Energy but The cost per unit is still high. At the same time we can think of Demand Side Management which will Reduce the consumption. As we know that 1 unit saved is 2 units generated.

Whenever the load shedding is done it is stringent in rural areas i.e. for 12–15 hours a day. The industries contribute 49 % of total energy Usage, compared to the other sectors. There is 8 – 35 % energy saving in the Industries. So it is important to reduce the energy used by the industrial sector. Energy efficiency means using less energy to perform the same function.

The objective of this project was to undertake extensive work on Energy audit and management in order to bring energy cost reductions. Energy audit and management at facilities has got great potential in saving which will give relief to the common people from load shedding. I made a humble effort to save the energy around 4,35,000 kWh (Annually) i.e. Rs. 44. 90 Lacs against the one time investment of 50 Lacs.

Please Remember SAVE ENERGY SAVE WORLD

First Prize at PG level in Pure Science

ISOLATION AND IDENTIFICATION OF LYTIC BACTERIOPHAGE FOR *SALMONELLA GALLINARUM* AND ITS APPLICATION TO CONTROL FOWL TYPHOID IN POULTRY BIRDS.

Shubhada Bhosale[1], Shailaja Salokhe[1] D. V. Mane2

1. Annasaheb Magar College Hadapsar, Pune
2. Research Scientist, Indovax research Centre, Haryana.

ABSTRACT

Around 1980 poultry business was established as complimentary way to achieve nutritional needs of increasing population. The development of poultry is hindered with microbial infection but most prevalent infection, among the bacteria is Fowl Typhoid caused by *Salmonella gallinarum*. This bacterial infection has remedy available in market such as antibiotic & vaccines. Enormous use of antibiotics, bacteria developed the "antibiotics resistance" and comparatively vaccines are very expensive and stressful to chickens. The alternate way to overcome this problem phage therapy can be used to control fowl typhoid is 'Phage Therapy'.

In present work, Lytic Bacteriophage was isolated from sewage samples and used as therapeutic agent. The minimal infectious dose of *Salmonella gallinarum* was inoculated orally in one-day-old chicks. When birds showed symptoms of fowl typhoid infection, phage therapy was applied. Birds were monitored for one month and result observed that infected birds were protected from fowl typhoid. Histopahologically, it was confirmed that body organs were not injured due to phage therapy. Thus it was found that phage therapy is successful alternative treatment for antibiotic resistant *Salmonella gallinarum.*

First Prize at UG Engineering and Technology

NOVEL MILKING MACHINE

Patent Application no: 1613/Mum/2006

Amol Kadam
B.E. in Mechanical Engineering
Vishwakarma Institutue of Technology,
Pune

ABSTRACT

Hygienic milk is one of prime necessary of human beings. Traditional way of extraction of milk from cow is by hand which is time consuming. .Efforts to extract milk by hand is time consuming painful etc. In India more then 98% uses this method. Most of the time extraction is done where the atmosphere is contaminated by dust, bacteria, germs etc. Also hand of a person who extracts milk may contribute to this contamination. I have designed and manufactured machine which will eliminate all this drawbacks.

Novel Milking machine is a machine by which we can extract milk from cow, goat, etc efficiently and without contamination. It consists of various parts and major components have been designed and manufactured considering various engineering logics and market survey data.

I have designed the system and developed the technology so that it will satisfy market need. The machine is easy to operate, electricity is not needed, it is portable, Safety features and most important it is affordable for Indian farmers.

First Prize at PG level in Pure Science

VIRTUAL KEYBOARD FOR THE BRAIN: AN EEG BASED BRAIN-COMPUTER INTERFACE.

Mr. Salil Sanjay Bidaye.
Institute of Bioinformatics & Biotechnology,
University of Pune.

ABSTRACT

A Brain-Computer Interface (BCI) is a communication system designed to allow the user to interact with the external world without using the brain's normal output pathways of peripheral nerves and muscles. In an EEG (Electroencephalography) based BCI, the user interacts with the external world via his/her EEG activity.

Different kinds of BCIs have been developed in order to achieve different applications or research goals. The BCIs can be classified into five types based on the electrophysiological signals they use: those using VEPs (Visually evoked potentials), SCPs (Slow cortical potentials), P300 evoked potentials, mu and beta rhythms, and cortical neuronal action potentials.

The primary aim of most BCIs is to provide a means of action and communication to people suffering from severe neurological disorders, typically those suffering from the "locked-in" syndrome in which the patients are almost completely paralyzed, as if they are locked into their own bodies. This state may be a result of various neurological disorders or injuries. One of the most well studied applications of BCIs is to provide a method of text-based communication to these patients.

In this study, novel "Virtual Keyboard" application for EEG based textual communication is suggested. This application is based on the use of two different types of BCI, the P300 evoked potential based BCI and the mu-beta rhythms based BCI. The combined use of these two types of BCI in a unique interface, would lead to a highly comprehensive and user-friendly "Virtual Keyboard" application. This application may also lead to increased communication rate as compared to the currently used applications.

First Prize at Research level in Agriculture and Pharmacy

START UP AND OPTIMIZATION STUDIES OF UPFLOW ANAEROBIC SLUDGE BLANKET REACTOR (UASB) REACTOR TREATING DISTILLERY PENT WASH.

Patil V.P., Kapadnis B.P.,Ghole V.S.
Department of Environmental Sciences, University of Pune, Pune-7

ABSTRACT

Feasibility of 6.5 lit. pilot scale Up flow Anaerobic Sludge Blanket reactor (UASB) at ambient temperature was investigated for the treatment of distillery industrial wastewater. The reactor was seeded with sludge obtained from anaerobic reactor treating distillery wastewater .The reactor start up for lasted for about 5-6 weeks. The neutralized feed was initially diluted to about 1000-2000 mg/lit. Low up flow velocities up to 100ml/hr were maintained and no recirculation was employed.

The feed concentration and organic loading rate were increased in steps as soon as COD conversion was higher than 50 %. By the end of the start up period, Volatile fatty acids (VFA) concentration in effluent was less than 1000mg/lit. while gas production rate of 6 lit/day was obtained. After successful start up undiluted wastewater with COD concentration of 50,000-65,000mg/lit was fed into the reactor. The up flow velocity was increased up to 150ml/hr to facilitate the effective mixing of sludge granules. COD conversion efficiencies more than 60% and gas productivity of 5-8 lit/day were obtained during the steady state operation. About 65% of COD removed was converted into methane.

This research investigation will study on optimum start up procedure and operating conditions that controls the UASB reactor operation and on process performance that could be attained for the anaerobic treatment as well as color removal of distillery wastewater.

Second Prize at UG level in Commerce, Management, Law

DISHA FOR COMMON MAN

Saurabh Balote, B.Com.
Sangamner Nagarpalika College,
Sangamner, Ahmednagar

ABSTRACT

From different government offices viz. revenue, Z.P., register, income tax, sale tax, excise, agriculture, P.W.D., irrigation different documents i.e. income certificate, caste certificate, crimilayer, mortgage, pledge, land survey reports, registration certificates, shop licenses are oftenly needed by common men.

Due to lack of strategic and procedural information common men spend their money & time.e.g. For different documents, different types of Affidavits are to be submitted. Affidavits written by hand on blank paper in proper format are also accepted. As common men don't know the format & contains of Affidavits & hence they spend Rs. 40 to 100 for making Affidavits.

Different Government schemes are not implemented effectively up to last Beneficial as last beneficial don't get information about such schemes in simple and suitable language. Hence we decided to ***spread information unto last masses*** in their own language, in simple & suitable format and as per their own requirement by using technology.
This project is dedicated to ***'The Common men of R.K. Laxman'.***

Second Prize at Research level in Pure Sciences

NOVEL ROUTE FOR SYNTHESIZING HIGHLY LUMINESCENCENT CDSE AND ZNSE NANOPARTICLES

Shashi B. Singh, Aparna C. Deshpande, S. W. Gosavi, S. K. Kulkarni
DST unit on Nanoscience, Department of Physics, University of Pune, Pune – 411007

ABSTRACT

The Luminescent nanoparticles have application in biological labelling, bar codes, solar cells, photocatalyst etc. Cadmium selenide (CdSe) and zinc selenide (ZnSe) nanoparticles have been shown to be excellent candidates in this respect. There are different methods to synthesize nanoparticles. However the most widely used method involves the use of high temperature (~300 0C), expensive, air sensitive, highly toxic and insoluble in water.

We have developed a novel method to synthesize highly luminescent CdSe and ZnSe nanoparticles (2 to 4.5 nm size range) using a relatively low temperature (100 0C), simple and inexpensive, less toxic and also water soluble chemical route. In this method cadmium acetate and zinc acetate were used as source of cadmium and zinc respectively. Sodium selenide was used as selenium source for both chalcogenide materials. Mercapto ethanol and thioglycerol were used as capping agents for CdSe and ZnSe respectively. Different sizes of CdSe and ZnSe nanoparticles were synthesized by changing the capping agent concentration.

The samples were characterized using UV-Vis spectroscopy, Photoluminescence spectroscopy, X-ray diffraction, FTIR and Transmission electron microscopy. When exposed to UV light samples showed strong luminescence in different regions of visible light.

Publication:

Shashi B. Singh, Aparna C. Deshpande, S. W. Gosavi, S. K. Kulkarni, Nanotechnology, 2007, Communication.

Second Prize at PG in Agriculture and Animal Husbandry

BIOPROSPECTING OF ALGAE GROWN ON POLLUTED WATER FOR SUSTAINABLE AGRICULTURE

Vishwnath S. Patil, Department of Botany,
University of Pune.

ABSTRACT

Water is essential natural source for life hence there is need to conserve the water. Algae play important role in conserving water bodies also they are base of food chain hence essential to the life of water bodies. As a result of tremendous increase in urbanization and industrialization the sewage is directly let into near by water bodies leading to eutrification of water bodies. Eutrification favours growth of algae forming bloom, utilizes O2 results in mortality of fish leading to huge loss for fish farmers, it blocks the water treatment plant of public water supply also sometimes secrets toxins harmful to humans.

Newly developed unique multipurpose plant by using sewage /polluted water under controlled photosynthesis naturally growing algae is raised, algae utilizes nutrients and CO2 and grow fast releasing O2 and they are taken away before they start to decompose. The Algal biomass depending upon the quality and protein content used as food, feed and manure, treated water can be used in fishery and agriculture, hence solve the problem of pollution.

It is seen that, the organic manures obtained from algal biomass gives good quality of crop yield and play an important role in sustainable agriculture.

Second Prize at UG in Medical and Pharmacy

ANALGESIC ACTIVITY OF MEDICINAL PLANTS

Rasal K.B, Bachkar A.R, Jape S.R, Jadhav R.S.
Department of Pharmacology
Pravara Rural College of Pharmacy, Pravaranagar

ABSTRACT

Analgesia is defined as a state of reduced awareness to pain and analgesics are the substances which decrease the pain perception by increasing the threshold to painful stimulant. Roots of *Martynia annua* (Martyniaceae), bark *Annona reticulata* (Annoniaceae) and *Hibiscus mutabilis* (Malveceae) were subjected to soxhlation. Petroleum ether, ethyl acetate and methanolic extracts were obtained. The evaluation was performed on using Hot plate method and Writhing test. Central analgesic activity and peripheral analgesic activity were performed on Swiss Albino mice. The phyto constituents responsible for analgesic activity were studied.

Name of Participant	Title of the Project

CATEGORYWISE LIST OF THE STUDENTS

HUMANITIES, LANGUAGES AND FINE ARTS	
Vivek Mohan Belhekar, Department of Psychology, University of Pune.	Partition in Temperament Matters
S. B. Kshirsagar V. P. College of EducationBaramati. Dist. Pune,	Evaluation of Teachers by Students.
Ms. Nrupa Soman Fergusson College, Pune.	Iconography and visual imagery in Bharatnatyam
COMMERCE, MANAGEMENT & LAW	
Balote Saurabh , S.N.Arts, DJM Commerece and bns Science College, Sanagamner, Dist- Ahmednagar	Disha Sarva Samanya Nagarikasathi
Ajinkya Arun Dharmadhikari, C.D. Jain College of Commerce, Srirampur, Dist- Ahmednagar	Chara va pashu Khadyati badala mule gaichi dudhachya gunawattet honare badal
Pure Science	
Ms. Gauri Minde, Mahatma Phule College, Pimpri, Pune	Study of bactriphage in control of harmful bacteria in the environment
Shashibhushan Singh Department of Physics, University of Pune	Novel route for synthesizing highly luminescence nanoparticles.
Appa Avhale, K.T.H.M. College, Nashik	Synthesis and biological evaluation of pyrazoloannelated heterocyclic compound
AGRICULTURE AND ANIMAL HUSBANDARY	
Vandana Patil Department of Environmental Science University of Pune.	Start up of optimization studies of UASB reactor treating distillations spent wash
Vishwnath S. Patil, Department of Botany, University of Pune.	Bioprospecting of algae Grown on polluted water for sustainable agriculture
ENGINEERING AND TECHNOLOGY	
Kadam Amol Ramchandra VIT College, Pune.	Novel Milking Machine
Yogesh Sonawane , Department of Physics, University of Pune.	Microbend weighing sensor(Force sensor) and gas sensors
MEDICAL AND PHARMACY	
Rasal K .B. Pravara Rural College of Pharmacy, Pravaranagar, Dist-Ahmednagar	Analgesic activity of some Indian Medical Plants.
Salil Bidaye Institute of Biotechnology and Bioinformatics, University of Pune.	Virtual keyboard for the brain

AVISHKAR Winners
2007-08

Sr.No.	Name of the Participant	Category	Prize	Title of the Project
1	Nareshkumar Suneja	Commerce and Management	FIRST	nergy Saving Strategies for IT Industry Equipments
2	Shreyas Kaptan	Pure Science	FIRST	Theoretical investigations on metal catalyzed Phosphodiester Hydrolysis
3	Achal Agarwal	Engineering & Technology	FIRST	Hybrid electric vehicle
4	Bhau Botre	Engineering & Technology	FIRST	Electronic Nose based on Embedded Technology and Neural Network
5	Rajesh Sharma	Medical & Pharmacy	FIRST	Esat6 And CFP-10 Protiens of Mycobacterium Tuberculosis in Making Diagnostic Tool For TB.
6	Mrs. Alpana Vaidya	Humanities, Fine Arts, Launguages etc.	SECOND	Social Involvement and Stress In relation to Information Technology Orientation
7	Ms. Sardesai Rajeshwari	Commerce and Management	SECOND	Training Effectiveness Evaluation at TATA Motors, Pune.
8	Ms.Yogini Gujrati	Agricultural and Animal Husbandry	SECOND	A Simple Test to assess available Zn(II) in the Soil
9	Mr. Ameya Gokhale	Medical & Pharmacy	SECOND	Characterization of hydrogel isolated from whole seeds of Ocimum basilicum and its investigation as novel binding agent
10	Ms. Priya Kadam	Medical & Pharmacy	SECOND	Screening of Medicinal Plants for Development of Novel Antiangiogenic Drug for Cancer Treatment
11	Mr.Sanket Tembe	Medical & Pharmacy	SECOND	Biosensor: Faster, Cheaper and Selective Tool for Clinical Diagnostics

Energy Saving Strategies for IT Industry Equipments

Nareshkumar K. Suneja,
Student- M. Tech. (Energy Strudies)
School of Energy Studies, University of Pune, Pune

Project Guide : Mr. Milind Mehetre, Honeywell Automation India Ltd. Pune, India

ABSTRACT

Uninterrupted Supply systems support the critical loads in IT Industry on a 24 x 7 basis. However there are times when the load is very low such as non working days and non-working hours. However the UPS systems are designed to have redundancy which leads to large over sizing and hence increased fixed energy losses.

In a personal computer unit the monitors are observed to be most energy intensive equipment. It constitutes roundabout 45-70 % of power as per various monitor sizes.

Most of the energy saving part concentrates on HVAC and lighting system. This project tries to cover the major left out areas i. e. UPS and personal computers in IT Industry.

The Project is refined to

A. Examine Energy consumption by monitors due to change in display properties.

B. Energy Efficiency in UPS systems by right sizing and adjustment in UPS capacity as per the work loads

Energy Conservation in PC Monitors

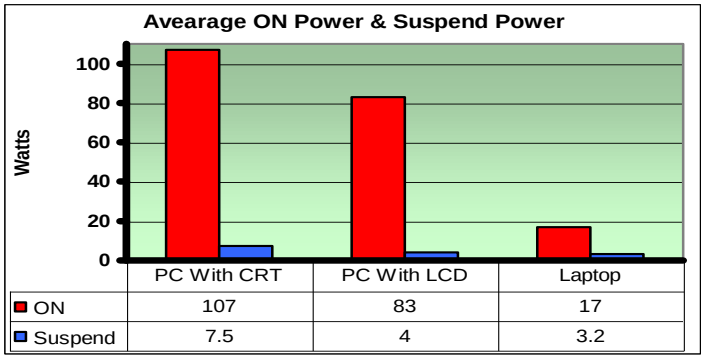
In this assignment 3 configurations of Personal computers were used namely..

> CRT PCs > LCD PCs > Laptops

The consumption levels were measured using a power meter. The experiment was performed on IBM and Dell make PCs. This was carried out in the following steps.

I. Measurement of power levels in ON and Suspend mode for

> CRT PCs > LCD PCs > Laptops



	PC With CRT	PC With LCD	Laptop
ON	107	83	17
Suspend	7.5	4	3.2

Theoretical investigations on metal catalyzed Phosphodiester Hydrolysis

Shreyas Kaptan

ABSTRACT

Nucleic acids including DNA and RNA are important in biology as genetic Information Messengers. These nucleic acids are comprised of phosphodiester linkage, which has been modelled by the methyl phosphodiester (MPDE). Under physiological conditions hydrolysis of phosphodiester is very less and can be catalyzed only in the presence of metal ions. To understand the role of metal ion in the MPDE hydrolysis and in particular how it influences the reaction pathway involving one or two alakli metal (Li, Na, K) ions and the associated energetics, have been analyzed employing the density functional calculations with the 6-31+G(d,p) basis set. Different pathways ('A' and 'B') incorporating only one alkali ion bonded to different oxygens of diester functionality are considered.

A pathway 'C' which leads to a six-membered ring formation with the nucleophile bridging the two metal ions and each ion interacting with different oxygens of phophoryl group has been considered. In addition pathways with two alkali metal ions bonded to the same phosphoryl oxygen as well as one with hydroxyl and other with methoxy oxygen ('D' pathway) and a yet another pathway ('E'), where the metal ion interacts with different oxygens of phophoryl group unlike in 'D'. A three-step mechanism involving nucleophilic (hydroxyl) attack, rotation of a methyl group and finally detachment of the methoxy group has thus been predicted. The penta-coordinated phosphorous intermediate was characterized as a local minimum on the potential energy surface only in these pathways. The present calculations further suggest that 'D' and 'E' pathways can favor equally (with 0.3 kJ mol–1 difference in the activation energies) in a gas phase. A transition state corresponding to a nucleophilic attack has a largest energy barrier, nearly 32.5 kJ mol–1 higher in energy relative to the reactant, in both 'D' and 'E' pathways.

A mechanism of MPDE hydrolysis in the presence of two Alakli ions is similar to that of the hydrolysis without a metal. Influence of solvents on the energetics of the stationary point geometries on the potential energy surface has been gauged using the polarizable continuum model (PCM) in the self-consistence reaction field (SCRF) calculations. The energy barrier between the reactant and the transition state resulting from the nucleophilic attack turns out to be relatively lower in the nonpolar solvents. Such studies pave a way to understand the mechanism of Metal assisted DNA cleavage, as a pharmaceutical tool.

Achal Agarwal
Sinhgad College of Engineering, Pune

ABSTARCT

Any vehicle which is driven by more than one power source is a Hybrid Vehicle. It is an important concept to improve fuel economy and to reduce emission of the vehicles.

The objective of project on Hybrid Electric Vehicle is to develop a system which will combine two power sources mainly I.C.Engine and Electric Motor and to achieve smooth switch over between them. The purpose behind developing this concept is to eliminate low speed-low efficiency problem of conventional I.C.Engine driven vehicle and less power to weight ratio of electric vehicles.

The smooth switch over between two power sources will be achieved by using specially designed gearbox called “Mechanical Hybrid Switch” (M.H.S.). At the time of starting condition (low speed city driving) the motor will speed up the transmission through M.H.S. up to specified speed range, there after engine will be cranked through M.H.S. During cranking the engine microcontroller will generate pulses to make the servo motors operate the clutches and brakes. Now as the speed will increase (highway driving) beyond specified limit the engine will take over the transmission. In case of power mode to achieve more speed or fast acceleration, motor will assist the engine. During the requirement of high torque at low speed I.E.H.C.U. will command engine to take over the transmission.

The Intelligent Electronic Hybrid Control Unit (I.E.H.C.U.) will consist of different Electronic Control Units (ECU). The Hybrid ECU will be a 32 bit microprocessor which will take feedbacks from various sub ECU’s and will give them command accordingly. The function of a Motor ECU which is a 16 bit microcontroller is to control 3ph induction motor and to give its feedback to I.E.H.C.U. The Actuator ECU will be used to control the servo motors. The Engine ECU will be used to control the throttle and to give the feedback to I.E.H.C.U. The sensors which are very significant part of the Electronics control Architecture will be used to give on-road vehicle conditions to various ECU’s. The different kind of feedbacks to I.E.H.C.U. from sensors will be in terms of inclination of the vehicle, speed of the vehicle and torque requirement of the vehicle.

Electronic Nose based on Embedded Technology and Neural Network

Botre B. A., Gharpure D. C. and Shaligram A. D.
Department of Electronic Sc., University of Pune, Pune: 41100

ABSTRACT

In view of the wider applicability and increasing importance of the electronic nose (e-nose) technology the aim of the present research was to design and develop an embedded electronic nose (E^2nose) and use it for different applications. The major design considerations were to make the system low cost, low power, modular and smaller in size so as to be portable. The present paper deals with the design and development of E^2nose based on the embedded technology and artificial neural network.

A PC based E-nose platform is realized consisting of the sensing unit, automatic sampling, data acquisition and E-nose software package (ESP). The ESP is used for data acquisition, signal processing, feature extraction and neural network training.

Based on the experimental study of transient response of sensor array, a mathematical model based on two exponential functions is proposed. A simulation tool is evolved using Lab VIEW software for the proposed mathematical model. The simulated and observed transient response for the different concentrations of the alcohol samples has been studied. The maximum conductivity and the response time are the features optimized using this study. The e-nose device is trained for the optimized features of known the odors or vapors. Later, embedded e-nose prototype is used in recall mode for the identification and concentration determination of unknown odors.

A modular prototype E^2nose is designed and assembled. E-nose software package is implemented on the ADuC831 hardware prototype. The optimized parameters and trained weight file are downloaded on to the E^2nose to realize the portable intelligent system for the odor classification. Prototype models for specific applications are designed, simulated and tested. From an application point of view, the E^2nose was successfully used for alcohol identification, concentration determination and mixture analysis, which can be very useful for industries like sugar, winery and petroleum. The e-nose is also employed for the food freshness detection. The food sample tested was bread. The main achievements during the research are:

- Design and fabrication of the sensing unit and sampling system
- PC based E-nose platform for the experimental study of tin oxide gas sensors
- E-nose software package (ESP)
- Modular prototype E^2nose using microcontroller
- E^2nose tested successfully for the application of alcohol identification, concentration evaluation and bread freshness detection

Acknowledgement : The authors thank CSIR, Gov. of India for financial support.

Esat6 And CFP-10 Protiens of *Mycobacterium Tuberculosis* in Making Diagnostic Tool For TB.

Mr. Sharma R. J.

Abstract

Tuberculosis (TB), one of the oldest recorded human afflictions, is still one of the biggest killers among the infectious diseases, despite the worldwide use of live attenuated vaccine and several antibiotics. New vaccines drugs and diagnostic screening aids are needed to stem the worldwide epidemic of TB that kills two million people each year. One of the several reasons of such a high mortality rate is lack specific diagnosis. PPD (Mantoux) is the only acceptable tuberculin skin test for screening. The skin test cannot distinguish between TB infection and TB disease. Most people who have active TB have a positive skin test, but some, as many as 25% of patients, will have a "false negative" results. Multiple puncture or "time" test have no place in evaluation of TB.

The genes [and proteins they encode], which are potentially involved in virulence, can be used for creating vaccines and drugs as well as selective diagnostic reagents.There are several studies investigating the diagnostic potential *Mycobacterium tuberculosis* specific antigens [esat6 and CFP-10] in experimental animals as well as during natural infection in humans and cattle. To follow suit Esat6 and CFP - 10 genes were amplified by using standard polymerase chain reaction. These genes were spliced in pET vector and expressed in *Ecoli* for large-scale production.

Alpana Vaidya, B. R. Shejwal
Dept. of Psychology, University of Pune

AVISHKAR 2007- 2008

(Key words- social involvement, stress and IT orientation)

ABSTRACT

Taking into consideration the growing importance of computer and it is use in youth, an attempt has been made in the present study to find out the relation between social involvement and stress in relation to Information Technology (IT) orientation among college going youth (in particular, final year B.Sc. Computer Science students).

SIGNIFICANCE OF STUDY : The present study was undertaken in view of

Dearth of studies on the impact of IT on the youth; particularly in the Indian setting. Debate over whether Internet is a potentially isolating activity or one that leads to more communication among people and thus enhances human connectivity and sociability. Computers have brought revolution in all sectors of development. E.g. health, education, industry, space or finance. NASSCOM survey (Mehta, 2000) there has been a growing population of Internet users in India. E.g. Internet users (Netizens) have grown by 40% in India (IAMAI, 2006).

In view of review of literature and theoretical foundation following objectives were set. They are as under-

To find out sex differences in stress.
To find out sex differences in IT orientation.
To find out the impact of ITO on social involvement and stress
To find out relation between social involvement and IT orientation.
To find out relation between stress and IT orientation.
To find out sex differences in social involvement.

CONCLUSIONS :

Social involvement was positively correlated with IT orientation.
Stress was negatively correlated with IT orientation.
Social involvement was negatively correlated with stress.
Boys and girls did not differ in social involvement.
Stress was more among boys than among girls.
Boys and girls did not differ in IT orientation.
IT orientation came as a significant predictor of stress.

IMPLICATIONS:

The present study will help to understand the psychosocial impact of IT on college going students.
The findings of the present study will help the educationists and policy makers to design curriculum
Help industrialists to select candidates having High IT orientation.

SUGGESTIONS FOR FUTURE RESEARCH :

Future studies may be conducted on Internet addiction.
Studies may be conducted to find out the effect of IT professionals.
Studies may be conducted on cyber crimes.

TRAINING EFFECTIVENESS EVALUATION
AT TATA MOTORS, PUNE.

Sardesai Rajeshwari
Modern College of Engineering, MBA Dept.

ABSTRACT

The objectives of the project were to evaluate the effectiveness of the training programs with reference to the following parameters.
Relevance and applicability to job profile.
Ability to facilitate skill enrichment efforts.

- Assess contribution to performance Improvements.
- The hypotheses derived from the objectives were
- Training programs are relevant to the requirements of the departmental needs.
- Training has helped the participants improve the performance.
- The participants were able to utilize their acquired skills and knowledge in the work environment.

The following process was followed for the research. The questionnaire was designed with quantitative questions i.e. participants & their superiors were asked to rate on the scale of five on each of the above mentioned objectives with five being the highest and zero being the lowest. The participants where also provided an opportunity to give subjective comments in the response sheet. Following this an analysis was carried out on the feedback and based on the two types of inputs, conclusions were also done at two levels.

a. Quantitative analysis to each training program level using coefficient of co-relation and coefficient of determination.
b. Qualitative analysis at the overall project level based on the recurring themes observed in the subjective comments that were provided across multiple programs.

Yogini Gujarathi, Sangamner College.

ABSTRACT

Key words : available Zincin soil,, Lawsone as Spectrophotometric reagent.

ABSTRACT

Zinc (Zn-II) is one of the important micronutrients associated with plant growth and overall crop yield. Available Zinc in soil sample is usually determined by Atomic Absorption Spectroscopy (AAS) which is costly and hence not affordable by many farmers. A simple spectrophotometric determination method has been developed which involves use of heena extract as a source of Lawsone, a chelating agent for Zn(II) in presence of 2 N CH3COOH . Lawsone is derived as heena extract from dried leaves of Lawsonia innermis (Heena) just by shaking with cold methanol.

Biosensor: Faster, Cheaper and Selective Tool for Clinical Diagnostics

Sanket Tembe [a, b], Sudha Kulkarni [a],

S. F. D'Souza[b*] , Meena Karve[a*],
[a] Department of Chemistry, University of Pune, Pune.
[b] Nuclear Agriculture and Biotechnology Division,
Bhabha Atomic Research Centre, Mumbai

Biosensor is an analytical device that uses biological substances as recognition element. Due to intrinsic, highly selective properties of biomolecular species, biosensors are the most selective one. Biosensors have the potential to provide low-cost detection and measurement technology for highly specific quantification of important analytes. The development of biosensors is the result of combined efforts of biologists, physicists, chemists and engineers. The unprecedented demand in research and development of analytical devices for detecting, quantifying and monitoring of biologically related species has led to the emergence of and extensive progress in biosensors. Biosensors are usually classified into various basic groups, according to the biorecognition principles and to the signal transduction.

Parkinson's disease is a degenerative disorder of the central nervous system that affects movement. The symptoms of Parkinson's disease result from dopamine deficiency. L-dopa is administered for Parkinson's therapy. Therefore, we have developed electrochemical biosensor for L-dopa and dopamine using a composite biopolymer matrix, agarose and guar gum [1, 2]. Agarose and guar gum are naturally occurring biopolymers having high permeability towards water. The composite material provides natural microenvironment to the enzyme and also gives sufficient accessibility to electrons to shuttle between the enzyme and the electrode. Its good film forming and adhesion ability, together with its nontoxicity and biocompatibility, has developed growing interest in using it for tyrosinase entrapment and subsequent sensor fabrication. The sensor performance was characterized in terms of sensitivity, linearity, detection limit, influence of pH and storage stability. It is concluded that this simple, easy-to-fabricate, reagentless electrode is suitable for quantification of catecholamine at micromolar level. The simple configuration of the protein-polysaccharide film may show great promise in both protein characterization and development of a new approach for biosensing applications. The most obvious potential applications of this tyrosinase-polysaccharide film-coated bioelectrode are in clinical diagnostics for determination of physiologically important catecholamines such as methyl dopa, adrenaline, and noradrenaline.

Characterization of hydrogel isolated from whole seeds of Ocimum basilicum and its investigation as novel binding agent

Ar. Ameya Gokhale
PDEAS's Seth Govind Raghunath Sabale College of Pharmacy, Saswad Pune

ABSTRACT

In an attempt to avoid complexities associated with development of synthetic and semi synthetic excipients, an unexplored area of herbal products is tried. The hydrogel was isolated from whole seeds of Ocimum basillicum authenticated by Agharkar Research Institute, Pune; and used as a binding and granulating agent to prepare granules of Paracetamol.

The purpose of this study is to elucidate and quantify the compactibility of Paracetamol granules prepared by using hydrogel isolated from whole seeds of Ocimum basillicum as a novel binder. The compressibility is the ability of the powder to deform under pressure and the compactibility is the ability of a powder to form coherent copacts. To test the functionality of novel excipients, Sonnergoard (2006) proved a simple linear model to confirm compactability, which is an uncomplicated tool for quantification.

The granules of Paracetamol were prepared by wet granulation technology. The granules were evaluated for particle size distribution, moisture content and flow properties. Average particle size of granules were found between 0.99µ to 1.3µ and moisture content was 0.07%. Hausner ratio for granules was 0.149 and compressibility index was 13%. These results revealed the necessary characteristics of granules ready for compression and indicated that they were suitable for tabletting.

Screening of Medicinal Plants for Development of Novel Antiangiogenic Drug for Cancer Treatment

Priya. H. Kadam under guidance of Dr.Sushma Chaphalkar and Rajesh Sharma
Vidya Pratishthan's School of Biotechnology (Baramati),
Pune University

2nd prize at PG level for Medicine and Pharmacy

ABSTRACT

Aqueous extracts from seven different medicinal plants were screened to test their Antiangiogenic activity. The activity of angiogenesis was determined by quatitation of blood vessels on Chick embryo chorioallantoic membrane (CAM) model. Among the herbal extracts screened, the aqueous extracts of *Curcuma longa, Acacia catechu* and *Picrocarpus santalinus* showed strong Antiangiogenic activity. Complimentary evidence of least cytotoxicity tested using MTT assay prove these extracts as potential Antiangiogenic drugs which can be used for cancer therapy.

Result : Curcuma longa, *Acacia catechu* and *Picrocarpus santalinus* showed remarkable antiangiogenic activity and formation of avascular zone in chick chorioallantoic membrane. The other four (aq) plant extracts showed negligible or no antiangiogenic property.

Complimentary evidence of least cytotixity by the above mentioned extracts prove them potential antiangiogenic drugs for futuristic use.

Exact mechanism and active principle involved along with masking effects of other components of the same extracts.