

INSEF Regional Fair – Mumbai

November 24th, 2017

Conducted By

The North Bombay Welfare Society's High School

Ghatkopar, Mumbai

in association with



Science Society of India

<http://sciencesociety.in>

on November 24th, 2017 at

The North Bombay Welfare Society's High School

Ghatkopar, Mumbai

(The abstract text provided is exactly as submitted by the participants)



Project Code:Bio-01 (Team) Online ID:2350

Title: Flower Pigments - As a Natural Food Additives and Healers

Name: Vishwalakshmi kanthasamy& jaiswal khushi manoj Std: 9

Guide: ms;tiwari priyanka

School: SIES High School K. A. Subramaniam Road; Matunga;

ABSTRACT:

Abstract

At the present point, in time the modern healthcare with scientific advances is hampered with the problems of medicines, chronic diseases, resistant infections, auto immune disorders, caused due to the extensive use of the synthetic colorants and chemical compounds drugs. The toxic constitution of the synthetic colorants and chemical compounds and their indiscriminate use, are known to be the major cause for Organ damage, Birth defects, Infections in human.

This awareness of the toxicity has raised the need globally for production and use of naturally derives compounds that can substitute the synthetic compounds. At the present point in time the modern healthcare with scientific advances is hampered with the problems of medicines, chronic diseases, resistant infections, auto immune disorders, caused due to the extensive use of the synthetic colorants and chemical compounds drugs. The toxic constitution of the synthetic colorants and chemical compounds and their indiscriminate use, are known to be the major cause for Organ damage, Birth defects, Infections in human.

This awareness of the toxicity has raised the need globally for production and use of naturally available colours .

This abstract highlights in the following

1. Extraction of pigments from the petals of Marigold, Hibiscus and Sunflower plants.
2. Flower pigments as a food flavor and colorant.
3. Flower pigment as an anti-microbial agent.

Project Code:Bio-02 (Team) (Jr) Online ID:2423

Title: Traditional Cleaning versus Commercial Cleaning

Name: Manish Mahendra Musale& Aryan Praful Bhor Std: 8

Guide: Mrs. Sujata Kiran Patil

School: The NBWS High School; Rifle Range; Ghatkopar(W);

ABSTRACT:

In olden days ash was used for cleaning utensils. Using wood ash as a cleaning agent makes a lot of sense. They are readily available, free, and relatively safe for the environment when compared to many types of soap or gels. Now a day's utensils washing powder/gel are not only used in cities but in semi urban and rural areas as well.

Therefore in this project we have compared traditional product (wood ash) with the commercial products available in the market. The utensils made up of steel, aluminum and glass are washed with wood ash and also with the commercial product available in the market. Each utensil was rinsed thrice, after every rinse, wiped with cotton ball and checked for bacteria level. Same process was repeated with the commercial product.

Finally we came to conclusion that utensils washed with ash have less number of bacteria compared to utensils washed with the commercial product.

Project Code:Chem-01 (Team) Online ID:2455

Title: Feasibility of using Pomegranate rind extract as pH indicator.

Name: Atul Pramod Mahajan& Rohit Ashok Yadav Std: 9

Guide: Mrs.Manisha Rajath

School: The North Bombay Welfare Society's High School

ABSTRACT:

Commercial indicators are expensive and some of them have toxic effects on users and can also cause environmental pollution.Hence a search for natural compounds as acid-base indicators was initiated.Pomegranate(Punica granatum L)contains anthocyanin.Extraction of Anthocyanin based compounds from pomegranate rind(Punica granatum L)was successfully carried out.The feasibility of this extract as pH indicator was tested using the extract against some household substances.A significant colour change in the extract was seen.Further research was carried on by experimentation in the laboratory and significant results were obtained.

It can be concluded that natural indicators could be an excellent replacement for synthetic indicators since they are cheap,readily available,simple to extract,non toxic,user and environmentally friendly.

Project Code:Chem-02 (Team) (Jr) Online ID:2460

Title: REMOVING COMPOUNDS OF HEAVY METALS LIKE COPPER AND LEAD FROM THE WATER BY ACTIVATED CARBON OF SPENT COFFEE

Name: PARTH. KRISHNAKANT. BHOSLE& SOHAM SUBHASH HADAWLE Std: 8

Guide: MARUTI. PATIL

School: N.M.W.S.HIGH SCHOOL; RIFLE RANGE; MUMBAI-400086

ABSTRACT:

Our project is based on physical method to remove compound of heavy metal like copper and lead dissolved in water with the help of activated carbon of spent coffee it is easier way to remove the copper and lead from water with low cost

Project Code:CompSc-01 Online ID:2333

Title: Digital Image Denoising with Convex Optimization Techniques

Name: Shreyash Gotmare& x Std: 12

Guide: Vidya Gotmare

School: PACE Junior Science College; Andheri; Mumbai

ABSTRACT:

The images that we capture have several features. Noise in images is one of such features. For example, when you capture an image using your camera, you do not see the raw image; instead, you see a processed image. In this project, we quantify the noise in our image as a convex function and use a convex-optimization technique to minimize this function. Thus, denoising our image. To minimize this function we use primal-dual hybrid gradient algorithms with several improvements. We then discuss the improvements in denoising using PSNR (peak-signal-to-noise ratio) between the images. There are several kinds of noise which may exist in images. Of these, the most commonly found and non-trivial to remove are Gaussian noise and Poisson noise. Although Poisson noise can be removed by diffusion techniques and nonlinear filtering, we can convert Poisson noise to Gaussian noise using the Anscombe transform. We then denoise the resulting image (with Gaussian noise). To do this, we claim that if our noisy image f is the centered at an N -dimensional ball (dense sphere), then the denoised image would be somewhere inside this ball. This is true since the sampled variance of our image would $m * n * \sigma^2$ which is approximately the radius of this N -dimensional sphere. Now the only thing left is to find the true image on this sphere. For that, we use a convex-optimization technique called the primal-dual technique. We divide our problem into primal and dual parts for this technique. The result is the denoised image.

Project Code:Energy-01 Online ID:2496

Title: Dead Battery Flashlight

Name: Mali Mahendra Kumar Rameshbhai& x Std: 11

Guide: Shishir Kumar Bhuyan

School: Sant Shri Asharamji Gurukul;motera;gandhinagar;guj

ABSTRACT:

Introduction:

This project can also be considered as green and environmental experiment,we can also use it as a flashlight that can be run by old ,weak,almost drained battery.When the voltage in the AA cells we are using to power our portable radio,camera,or other device,has dropped so low they will no longer power it, there will most likely still be enough energy in them to run this little flashlight for a useful length of time.We can use it to squeeze the life out of our old,almost drained,non functioning batteries.

Scientific Principle :

The circuit used in this project is "Joule thief " .A Joule thief is a self oscillating voltage booster.It takes a steady low voltage signal and converts it into a series of high frequency pulses at a higher voltage .

Materials for construction :

Most of electronics materials are collected from waste electronics materials . (1)Battery box for single AA battery (2) wires (3) white LED (4) torroid transformer (5) flashlight switch(6) 1 kilohm resistor / variable resistor (7) 2N 3904 NPN transistor / 2N 3055 transistor (8) Dead battery 0.4 volt to 1.0 volt emf .

Result : Single LED flashlight cannot . Our joule thief flashlight run 1.2 volt with 110 LED with 50 lux from 0.5 ft distance. Mini torch 3watt LED run by 0.8 volt with 20 lux from 0.5 ft distance .

Reference :

<https://www.popsci.com/joulethief>

<https://makezine.com/projects/vampire-flashlight/>

https://en.wikipedia.org/wiki/Joule_thief

Project Code:Engg-01 (Team) Online ID:2283

Title: INTEGRATED ATMOSPHERIC MOISTURE CAPTURING DEVICE

Name: GANESH CHALLAPPA MUDALIAR& Rishabh Sudhakar Shetty Std: 9

Guide: Rajeshwari S. Nair

School: The NMWS High School;Ghatkopar{west};Mumbai - 86

ABSTRACT:

In our project , we had captured moisture and condensed it to water by an innovative method . Air conditioning is the process in which the humidity (moisture) of a place is removed and converted into water. For this process Air conditioners are used. But these air conditioners are expensive as well as environmentally harmful because they release CFC.We have done this same process in a less expensive and non environmentally harmful method. In our project , we have used the inverse process of this exhaust for capturing moisture . After capturing this moisture ,it is passed through several holes made on certain number of plates placed one below the other . The dimensions of this plates are equal but the diameter of holes on each plate is different . The holes on the topmost plate are of largest diameter which goes on decreasing after every plate and is consequently the least on the bottom plate . Due to the decreasing area of holes ,the pressure on air increases (as the force from the exhaust is constant)and finally the air gets compressed. When this compressed air is passed through the coiled copper tubes fixed at the smallest holes ,with the help of a radiator water drips down the tubes.For conservation of energy we will also make the device solar powered.

Project Code:Env-01 (Team) Online ID:2233

Title: To evaluate the efficiency of Jackfruit seed starch superabsorbent polymer for water conservation

Name: Pooja Raman& Sanjana Anand Std: 9th

Guide: Ms.Dipti Panchal

School: P.G.Garodia School (ICSE)

ABSTRACT:

Uncertainty and irregular has made us treat water like liquid gold. We should be doing everything to conserve water. In this research an attempt is made to convert Jackfruit seed starch powder(JSSAP) to super water absorbing polymer .and compare it with commercially available starch modified cellulose fibers .

.Starch & Carboxymethyl cellulose sodium salt were synthesised in a ratio of 1:1,1.5:1,2:1. Further crosslinked with varying amount of aluminum sulphate.. The solution was dried at 70oC . JSSAP were characterized by FTIR , Swelling capacity was 29g/g for modified JS starch . Gel fraction was 33%. Chilli & mustard seeds were planted in pots that contained soil amended with the JSSAP, control A&B were maintained. Plant were watered at different intervals . Amended soil showed better retention of moisture. The plants with no amendment to the soil stopped growing after the first two weeks .chilli & mustard Plant height increased by 75 % and 80 % for JSSAP treatment for +ve controls it was 35- 45% .

From the results it can be concluded JSSAP can be an alternative to petroleum based superabsorbent polymers for water retention during irrigation.

Project Code:Env-02 (Team) Online ID:2292

Title: VERSATILE USE OF COMPOSITE BOARD MADE FROM CORN SILK- RLDPE WASTE

Name: Tanishka Kishor Kaspale& Aanchal Laxmikant Sharma Std: 9

Guide: Rajeswari S. Nair

School: The NMWS HIGH SCHOOL; GHATKOPAR[W]; MUMBAI-86000

ABSTRACT:

This study investigates properties of composite board made from recycled low density polyethylene and corn silk. The composite was made using a hot press. The raw materials used in this research are: corn silk which were collected from around the surroundings in Ghatkopar , Mumbai, where they have been dumped after usage.They were then washed and sun dried and crushed into smaller sizes. recycled low density polyethylene (RLDPE) used in this research was obtained by collecting low density polyethylene films from refuse dumping ground The low density polyethylene film was then washed and sun dried to remove dirt's. They were afterwards shredded using a pulverizing machine to smaller particle sizes.The formulations comprise 60-40 wt% of RLDPE: corn silk. The corn silk particles and the RLDPE were mixed at a temperature of 130°C into a homogenous mixture, using proportions of (60-40)%, (50-50)%, and (40-60)%. The mixture was placed in a mould and pressed to a thickness of 4 mm, at varying temperature for 12-15 minutes nd pressures of (3-5) MPa. At the end of press cycle the composites were removed from the press for cooling The Corn silk particles added to the RLDPE polymer improved the compressive strength of the composites.The test results from the compressive tests indicated the highest compressive strength of the RLDPECS was 17.88 N/ mm² and the average compressive strength was found to be 17.901 N/mm² All samples used in this study also had the potential to be used as sound-absorbing materials.

Project Code:Env-03 (Team) (Jr) Online ID:2367

Title: To make weather indicating flower

Name: Ambareesh Govindakrishnan& Hiteshkumar Devram Ghanchi Std: 7

Guide: Vasundhara Dhananjay Sinkar

School: N. M.W. S.High school Ghatkopar(w)

ABSTRACT:

The amount of moisture in the air i.e humidity , can be used as the basis for forecasting the weather . When the humidity is high , rain is likely , while a low humidity usually indicates a dry spell . This project is based on the colour change in Cobalt Chloride by the moisture in air .

We made flower with the help of blotting paper . We made Cobalt Chloride strong solution in water . Then we put the flower in warm place to dry . In rainy season the colour of flower was blueish pink and in dry atmosphere the colour of flower was light blue .

Thus this simple procedure can be used to indicate weather and accordingly we can take preventive measures .

Project Code:Env-04 (Team) (Jr) Online ID:2411

Title: Pencil with Weed

Name: YASH NAVNATH CHIKHALE& AMANDEEP SINGH GURDEEPSINGH RATHOD Std: 7

Guide: PRITI MANOHAR ATTARDE

School: NORTH BOMBAY WELFARE SOCIETY'S HIGH SCHOOL

ABSTRACT:

The project aims to reuse the organic waste and to utilize a weed which is unwanted.

Lead of the pencil is being made by using the mixture of soot, coconut shell's ash and clay. The lead is covered with the branch of lantana weed instead of wood. Graphite is replaced by soot, removed from kitchen chimney and coconut shell's ash.

Soot and coconut shell's ash in the ratio 3:1 was mixed with the black clay. 5 ml of Arabic gum was added to the mixture. The mixture was soaked in water for 2-3 hours. Then the mixture was filled in the mould and kept for sun – drying for one day.

Then the lead was soaked in the oil for 5 min and dried for some time. Later this lead was fixed in the piece of branch of lantana weed.

Project Code:Env-05 (Team) (Jr) Online ID:2412

**Title: RED DRAGON FRUIT PEEL AS ANTIOXIDANT FOOD COLOURANT AND
ANTIOXIDANT-ANTIBACTERIAL BABY WIPES**

Name: AVANTIKA RAVINDRA DOKE& ADITI SHARAD DONGRE Std: 8

Guide: VANITA SINGH

School: NORTH BOMBAY WELFARE SOCIETY'S HIGH SCHOOL

ABSTRACT:

Chemical food colourants available in market and used in food material cause various health hazards.the colorant like yellow-5, yellow-6, red-40 are carcinogenic and causes different health problems like irritability, learning impairment, allergies and aggressiveness.

baby wipes available in market are fragrant and easy options for mothers to wipe their babies. But the carcinogenic chemicals present makes these wipes equally dangerous to newborns. Chemicals like formaldehyde, hydroquinone, ethylene oxide are the hidden culprits in baby wipes.

as the red dragon fruit peel extract is a natural organic material and has different health benefits and tested before as suitable bio-indicator which is cheaper and easy to make is tested for its antioxidant property and antibacterial property.

the rdf extract is used to make home made baby wipes in a very cost effective manner. And rdf powder is made to be used as an antioxidant edible food colourant.

Project Code:Env-06 (Team) Online ID:2453

Title: MARIGOLD A WONDER PLANT

Name: LAKSHY KARNWAL& ARJUN V. Std: 11

Guide: MANI SRIVASTAVA MANJU PATEL

School: D.A.V. INTERNATIONAL SCHOOL ;KHARGHAR.

ABSTRACT:

Our Novel and Economic way is to use the natural properties of the wonder flower "marigold" for purification of water bodies with sewage effluents and Idol immersion. This aim is being achieved using the chemicals of the wonder flower namely cinnamic acids as caffeic acid, safranin, oleanolic acid, Alpha terthienyl and some phenols to remove the contaminants.

For this we collected water from different water bodies and checked its contamination for

Biological - Microbes

Chemical - Dissolved salts, Oils, fats, milk, soap, detergents phosphates, chloride, sodium, nitrogen

Different Heavy metals

We passed this contaminated water from our prototype having marigold, a magical property of the flower is used to remove the contaminants mentioned above, found in Sewage Water.

Adsorption of all heavy metals and chemicals

Antimicrobial, free radical scavenging, High antioxidant characteristic, Exhibits antibacterial, antiviral, antiprotozoal, Anti insecticidal and pesticidal properties

Inhibits the growth of Escherichia coli, Klebsiella pneumoniae and various other bacteria

Then the water was again analyzed with the presence of contaminants and the different observation shows the decrease in the hazardous heavy metals and Chemicals.

Our extension is to make mesh of marigold which will be used in sewage treatment plant, water would be allowed to pass through these number of meshes. Water coming on other side will go for further purification. When the water enters the filter, all the heavy metals and traces of e-coli bacteria would be stopped by the safranin and bacteriophages due to their scavenging and antibacterial properties respectively.

Project Code:Physics-01 Online ID:2306

Title: Studying planetary system formation through analysis of exoplanetary data

Name: Antara Raaghavi Bhattacharya & x Std: 9

Guide: Mayank Narang

School: G.D. Somani Memorial School; Mumbai

ABSTRACT:

In the last few years, many exoplanetary systems have been discovered, especially by NASA's Kepler mission. Much recent work has been to find other Earth-like planets, within potentially habitable zones around stars. However, there is a lot of exoplanetary data that has still not been fully analysed. A detailed study of other exoplanetary systems may provide clues about the origin and evolution of planetary systems including our own solar system. In this project I used data from the NASA exoplanet archive and the Exoplanet Orbit Database (EOD). These list various stellar and planetary parameters that have been obtained from mostly from planetary transit and radial velocity measurements.

We looked at histograms of planet mass, planet radius, separation from the parent star, orbital period etc. From the results obtained so far we see that observed planets fall in two categories – a large clustering of planets with size between Earth and Neptune, and a relatively smaller number of Jupiter or large sized objects. Most objects also seem to lie very close to the parent star. Surprisingly, there are no planets in our solar system which are among the most common planets observed. This suggests that the solar system is perhaps not a typical planetary system, especially in terms of planet size and separation.

We are investigating correlations between the properties of the parent star and the orbiting planet(s) by analysing scatter plots of parameters to find trends which may not have been observed before, for example, looking at possible relation between the luminosity of the star and the size / distance of the planets.