

### Study Tour Report 2018-19

As part of the curriculum, the Dept. of Chemistry organized a study tour to Ernakulam and Munnar on 16<sup>th</sup> and 17<sup>th</sup> March 2019 for 24 students of 6<sup>th</sup> Semester B.Sc Chemistry. They were accompanied by the faculty member Dr. Mercy Raj C and Sri. Asharafudeen. The Team started their study tour from Mannaniya College at 8.15 AM on 16<sup>th</sup> March and reached Anna Aluminium and Kitex Garments Limited of Anna Group, an ISO 9007-2008 certified company, at Kizhakkambalam on 16<sup>th</sup> March 2019 at 2.00 PM after six hours of journey. Anna Group started out as an aluminium product manufacturer over 43 years ago. At Anna Aluminium Company, machine power as well as manpower is utilized for making products. The moulding of vessels is done by group of skilled workers. Kitex Garments Limited uses automated weaving machines. For stitching and quality checking they use manpower. The employees of both industries are very dedicated and pleasing. They interacted with the students and explained how the whole process is going on smoothly. The Operations Head, Quality Control division, explained the moulding process employed for the production of Aluminium Vessel and the procedure for cleaning the utensils after the manufacture

#### Anna Aluminium company Limited- Profile

Anna Group started out as an aluminium products manufacturer over 43 years ago, and expanded into other sectors such as food and spices, textiles and more. The group is committed to quality and highly adopt in identifying new business opportunities and challenges. After Anna Aluminium, its flagship company, Anna Group also established a textile unit, Kitex. The ScooBee Day and Trawellday Bags division under Kitex caters to the constant demands for school bags, travel bags and similar products. Saras Spices, launched in 1979, is a major player engaged in the processing and distribution of spices, branded curry powders and masalas. Anna Group has always been focused on expanding its possibilities through diverse products and brand portfolio. From fast selling Aluminium utensils to much-in-demand anodized aluminium extrusions, Anna Group is consistently developing its potential. The company's state-of-the-art manufacturing units produce Aluminium sheets which are in high demand in the construction industry.

The team also visited Hill palace, Marine Drive and Lulu Mall after the session at Anna Aluminium company. After the dinner, the journey to Munnar was started at 8.00 PM.

At 12.30 AM, they reached Adimali on 8/11/2017. The students and the Teachers-in-charge were accommodated at White Castle hotel at Adimali.

The itinerary of the trip also included Visit to Madupetty Tea factory at Kannan Devan Hills Plantations Ltd, Munnar on 17/ 03 / 2019. The next day began with a visit to the Tata tea gardens, Mattupetty dam, Kundala dam and Eco point which are the most famous tourism destinations in Munnar. Various activities such as boat riding, shooting etc were carried out. Later, the tour group visited the Madupetty Tea factory and Tata Museum at Kannan Devan Hill plantations Ltd, Munnar . In the first session, the students were explained about the history of tea evolution in world, first tea plant in India, importance of tea in our daily life, benefits of green tea, right procedure of preparing tea, its production process etc. During this session, students interacted with the Chemical engineer very effectively particularly about white tea and its method of preparation. This session was concluded with a tea.

After this session students were taken to Quality control unit and production unit and they got an opportunity to observe the processing of tea leaves and production process. During the trip, students gained practical knowledge about the preparation and processing of different types of tea. Many of the points explained theoretically in the first session were explained again practically.

The tour concluded with the arrival at Mannaniya College at 4.00 a.m. on 18 th March. The tour was an enriching and memorable experience for students and teachers alike.

## STUDY TOUR REPORT 2017-18

An organizational study encompasses the study of organizations from multiple view points, methods and levels of analysis. The Industrial visit of 48 BSc Chemistry students was held on 7th November 2017 in a production industry named Travancore Titanium Product Limited Trivandrum in the year 2017-18.

### **SCOPE AND OBJECTIVES OF THE VISIT**

Titanium Dioxide is an organic solid with a number of excellent physical properties, which make it the principal white pigment of commerce. It is becoming increasingly dominant over rival white pigments such as white lead. The main objective of the industrial visit was

- To understand the actual functioning of the company
- To know about the practical application of various learned theories in the organization.

### **TRAVANCORE TITANIUM PRODUCT LIMITED**

TTPL is a public limited company under the State Public Sector with Government of Kerala owning 80.94% of the shares. Kerala State Industrial Development Corporation (KSIDC) holds 7.91% and the balance held by the public. In this industry there are approximately 826 Employees and 110 officers, all work with the view of improving efficiency, profitability, competitiveness and maintain market leadership. The workers age limit is 58 and officer's age limit is 60. TTP has proposals to expand its capacity to 27000 tons per year, modernise and diversify in stages to produce both Anatase and Rutile Grades of Titanium Dioxide pigment. Travancore Titanium Products Ltd. was incorporated on 18th December 1946, to produce pigment grade Titanium Dioxide from ilmenite, which is abundantly available as placer deposits on beaches near Kollam, in the coastal state of Kerala, India. The company which started production at a modest rate of 5 tons per day increased its capacity in stages to the present level of 40-45 tons per day. Till recently, Travancore Titanium Products Ltd. was the only unit producing Anatase grade Titanium Dioxide pigment, in India. It is a matter of pride that the manufacture of a rare chemical like Titanium Dioxide which was confined to highly industrialized nations of the west, was taken up herein Trivandrum for five decades. TTP was the only unit producing this white pigment, not only in India, but also in the whole of South-East Asia. The plant has the capacity to produce both



Anatase and Rutile grades of Titanium Dioxide. The plant functions round the clock in 4 shifts.

The journey started at 8.00 AM from Mannaniya College of Arts and Science , Pangode . 48 students of II and III B.Sc Chemistry participated in the study tour programme along with 2 faculty members, Dr. Mercy Raj C. and Dr. Parameswaran Ashok Nair. The team reached Travancore Titanium Products Limited , Thiruvananthapuram at 10.00 am. After all formalities, the team got into the company at 10.15 am, and visited various research departments ,  $\text{TiO}_2$  pigment and Sulphuric acid plants of TTP Ltd. The faculties of the company explained the working methods and also the chemical reactions taking place in various plants. All procedures were completed at 1.00 PM

After lunch, the journey to Mysore was started at 2.00 PM. At 1.15 pm, we reached Mysore at 7.00 AM on 8/11/2017. After visiting Mysore palace, Chamundi Hill , St Philomena Church and Sriranka Pattanam, we started our journey to Coorg at 7.00 PM and reached at President Building, Coorg for stay at 9.30 PM .On the third day (9/11/2018) after fresh up and breakfast we visited Bamboo forest and Golden Temple at Coorg. Students also got a chance to participate in boating. We have also arranged a campfire for the students. Coorg is a rural district in the state of Karnataka and is considered as the 'Scotland of India'. This place is rich with waterfalls, rivers and forest areas. This was a nice experience for the entire team and reached Wonderla, Kochi on the fourth day, 10/11/2017 for a full day excursion. The students enjoyed water slides, Dry rides, Games, Rain dance etc. Wonderla Holidays owns and operates the popular Wonderla Amusement Park in Kochi, which was originally called Veegaland until it was re-branded in April 2011. This park is situated on the top of a hill at Pallikkara, 12 kilometers from the city of Kochi. Wonder la is one of the only 2 amusement parks in India to implement OHSAS 18001:2007 safety standards. It has water treatment plants to recycle process and filter all types of water. The park has a water quality control laboratory to monitor quality levels of water used for different purposes.

We started our journey back to college at 8 PM. from there and returned to college at 5.45 AM on 11/11/2017. We successfully completed our study tour programme and Industrial Visit which was well co-ordinated by the staff members with the active participation of all the students.

## STUDY TOUR REPORT 2016-2017

The study tour as per the curriculum of B.Sc Chemistry Programme was an exposure trip to a place of educational importance like a chemical factory or a research institution. The study tour programme for 22 B.Sc Chemistry students was arranged on 28<sup>th</sup> January of the academic year 2016-2017 under the supervision of Dr. Mercy Raj C, HOD of Chemistry and Dr. Parameswaran Ashok Nair, HOD of Mathematics. It was planned for a day for the industrial visit from Mannaniya College, Pangode to IRE, Chavara, Kollam. The expected outcome includes providing situations for the student- teachers to learn and get acquainted with the process of separation of mineral from ore based on its electrical and magnetic properties. We reached our target place at 10.00 AM. We were divided into two groups. Each group was accompanied by a guide. The guides provide better information about mining and mineral separation.

Indian Rare Earths Limited, Chavara is located 10 KM from the north of Kollam District in Kerala, India. It is perhaps blessed with the best mineral sand deposit of the country. The plant operates on a mining area containing 20% heavy minerals and extending over a length of 23 km in the belt of Neendakara and Kayamkulam. The main products of Chavara unit are Ilmenite, Rutile and Zircon, Sillimanite, Zirflor and Monazite.

Ilmenite is the chief source of  $\text{TiO}_2$  which is the whitest material ever known and which has a lot of application from paint industries, welding rod coatings, paper and rubber industries as a filler. It is used as white pigment, used in medical fields as shell of capsules, tablet coatings etc. It is also used in surgical implements, cardiac pacemakers etc. Rutile is used as a source of Ti and form deeply coloured specimens. It is also used as a flux in the manufacture of Titanium sponge metals. Due to its tensile strength and corrosion resistance titanium and its alloys are used in air craft industries and also in chemical plants. Zircon is used as ceramics and as a refractory material. It can also be used in the manufacture of Zirconium compounds and alloys. Sillimanite is mainly used in the production of refractory and also be used in ceramic industries. It can be used as an insulator and also in cosmetic preparation. Thorium obtained from Monazite is used for the production of thorium based fuels in fast breeder reactor and in the preparation of incandescent gas mantles.

The industrial visit is an innovative programme conducted by the Department of Chemistry. At IREL raw sand material is obtained from the coastal areas of Kerala. The visit to the Plant enabled us to understand that the separation of mineral from the ore is based on its electrical




## STUDY TOUR REPORT 2015-2016

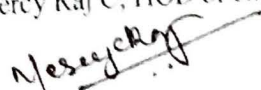
The Department of Polymer Chemistry, Mannaniya College of Arts and Science, Pangode conducted an educational tour for the final year B Sc students on 25-2-2016. The team comprised of 11 students and two faculty members of the Dept of Polymer Chemistry. The prime objective of the tour programme was to prepare a project report after visiting a reputed institution related to polymer science. In this regard the team visited HLL's Corporate Research and Development Centre (CRDC) in Aaakkulam, Thiruvananthapuram.

Hindustan Latex limited is a public sector company (HLL) started to serve the Nation in the area of Health Care, on March 1, 1966, with its incorporation as a corporate entity under the Ministry of Health and Family Welfare of the Government of India. Health Care aids includes Blood Transfusion Bags, Hydrocephalous shunt, Surgical Sutures etc. The main aim of the company is the production of low cost products. These products have much application in the medical field. The contraceptive pill is marketed under the trade name 'Saheli'. The various sections in HLL's Corporate Research and Development Centre (CRDC) in Aaakkulam, Thiruvananthapuram are Polymer research lab, natural products section, Central instrumentation lab and Diagnostic and Synthetic product section etc. In the Natural product lab different types of medicines are prepared from the extraction of plants. The important medicines among them include antifungal formulation, Herbal microbicide gel, stretch mark cream, Uterine tonic etc.

We received a warm welcome at the HLL and were able to spend quality time at the institution. A lecture with the accompaniment of LCD projector describing the various process involved in the manufacture of different Health Care aids was arranged. The team felt that the class was very insightful and interesting. After the class, a field visit intended to familiarize the students with the different activities at the institution was also arranged. The instruments present in various sections are Rotary evaporator, Clevenger Apparatus, Bath Sonicator, Gas, column and gel permeation chromatography, Elisa Reader etc.

The team started its journey from Mannaniya College at around 8 A.M. The group also visited Thenmala Ecotourism which was a refreshing experience for the students. We reached the college at around 6.30 P.M. The tour was a very pleasant and informative one and proved to be an enjoyable experience for both the students and the faculty members alike.

  
Dr Mercy Raj C; HOD of Chemistry



## STUDY TOUR REPORT 2014-2015

The study tour programme of the Dept of Chemistry, Mannaniya College of Arts and Science, Pangode for the academic year 2014-2015 was conducted on 13<sup>th</sup> March 2015. The team comprised of 20 students (14 girls and 6 boys) were accompanied by two faculty members of the Dept of Chemistry. We selected Family Plastics and Thermo ware Ltd., Manvila, Thiruvananthapuram for our industrial visit. Our aim was to study the use of different grades of polymer for the production of plastic materials and their processing technology.

We started our journey from Mannaniya College at 7.30 A. M and reached our target place at 9.30 A.M. Family Plastics is a leader in development and manufacture of innovative plastic products. Things of exquisite designs blended with charming colours and utility made of pure and virgin materials is a matter of fascination for everybody. At Family Plastics, they uphold the universal spirit of beauty, purity and quality and imbibe the basic perfection intrinsic in these values. The resounding success of their products in eighteen countries spread across five continents makes Family Plastics the most sought after names in Indian plastic industry.

We received a warm welcome at the Family Plastics and were accompanied by a supervisor. First he introduced about the FAMILY PLASTICS and then he explained the processing technique like injection molding for the production of plastic materials. The size and shape of different products depend on the type of mould used. The main raw materials consist of different grades of poly propylene and poly ethylene. The raw materials were compounded with different pigments, plasticizers etc before the production of various articles. The main products are chair, Bucket, mug, dust bin, House hold items, Kitchen containers, flower pots, furniture etc. The raw materials are purchased from Indian oil corporation, Haldia petrochemicals limited and Reliance petroleum. The clear advantage of Family Plastics over its peers is the superior quality of all its injection moulds which were made in their own factories using the finest class of steel and most sophisticated machineries. Due to this reason they export quality products not only in India but also into 32 countries including the beautiful cities of North America, the interior Middle east and Maldives