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6TH INTERNATIONAL EXHIBITION ON PLASTICS

Science City Ground, Kolkata
India, October 5 - 8, 2012

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PLASTICS INDIA

A journal for the growth and development of plastics trade & industry

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Editorial

Dear Members,

Good day !

When we are fast approaching to Indplas'12 I think you are all agree to me if I write something about exhibition – why Exhibitions are important and how exhibition can promote business.

In an Exhibition everything your company stands for is being exhibited on the show floor.

Exhibiting is a powerful tool in enhancing your brand as well as an extension of your sales and marketing function. Everything you present needs clarity of purpose, consistency and focus. When you exhibit a product the customer can see the actual product by visiting your stall, get product details, its quality and take decision whether the same is up to your expectation and meeting with your requirements. This is not possible by simply going through the brochures or catalogues.

Promoting your presence at exhibitions is about developing promotional opportunities that attract business and communicate a consistent image to the market.

Your exhibition promotional campaign should accomplish three things:

- Attract visitors to your stand
- Engage the visitor and allow interaction
- Get your products or services accepted by the visitors

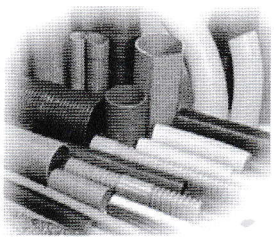
There are many avenues to promoting your presence at an exhibition, including:

- Direct mail campaigns
- Advertising
- Sales letters, business letters and emails
- On your website
- Sponsorship opportunities

Take advantage of as many promotional opportunities as possible – but make sure they fit within your marketing objectives. Everything you develop should have the same look and feel. Consistency and repetition are vital in brand awareness. People buy from brands they know and can trust. The perception you create of your company, products or services has a major influence on the buying behaviour and brand preferences of prospective customers.

Yours truly,

Pradip Nayyar
Editor



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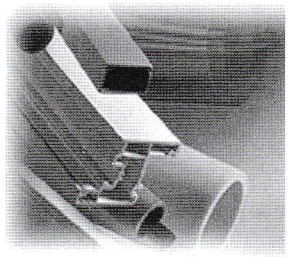

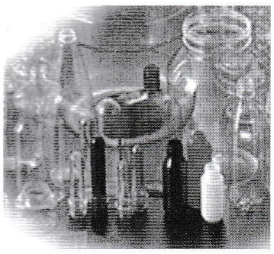

PRESIDENTIAL ADDRESS

Dear Members,

Indplas'12 is round the corner. Only 4 months are left for the mega event to become a reality. Team **Indplas'12** is really working hard to make it a grand success.

We have a new Poly Park coming up in Hooghly District. This Poly Park is being developed by a private entrepreneur, which is situated about 7 kms from Dankuni Railway Station in Mouza Gokulpur. Negotiations are on with the promoter of the Poly Park and Federation will inform you when all the modalities are completed.

There is a stagnancy in the international polymer prices and hope soon we will be seeing a downward trend.

I again sincerely approach all of you to please come forward and jointly work for the success of **Indplas'12.**

With warn regards

Rajesh Mohta
President

SECRETARIAL REPORT

Dear Members

In the month of April three new applications were accepted by the Executive

Committee for grant of membership of the Federation. The applications were from:

i. M/s Hindustan Mono Film Industries, Howrah, Life Manufacturer Member.
ii. M/s Polmann India Ltd, Kolkata, Manufacturer Member
iii. M/s Rubchem India Pvt. Ltd., Kolkata, Life Dealer Member

We welcome these three units as members of the IPF family.

IPF team has geared up for gettimg all the necessary permissions for holding Indplas'12 exhibition.

Shri Amar Seth, Shri R. A. Lohia and Shri Jayanta Bandyopadhyay visited Science City exhibition ground for discussing various aspects related to ground booking and seminar hall booking. The team also discussed catering services,car parking facilities available in the fair ground. They were happy with the discussions and the facility available at Science City.

Marketing visits to different cities for getting exhibitors and sponsors will commence from this month. Shri Amar Seth along with other members will be visiting Mumbai for 3-4 days for this purpose. To enable our Indplas'12 marketing team to get more exhibitors Early Bird Discount period has been extended as given below:

1. Rs.400/- per sq.m. if full payment is made on or before 30.04.2012 extended to 30.06.2012
2. Rs.100/- per sq.m. if 50% payment is made by 30/06/2012 and Rs.100/- per sq.m. if balance 50% paid by 15/08/2012.
3. Rs.150/- per sq.m. if full payment is made between 01.07.2012 to 15.08.2012
4. No discount will be allowed for booking made after 15th August 2012 and delayed payment of installment.

I request IPF members to kindly book more stalls or actively work for getting more stall booking. I look forward to a greater participation of our members in Indplas'12.

Plastindia Foundation will be holding its Silver Jubilee celebration on 21st May 2012 at Mumbai. As a founder member of Plastindia Foundation we are proud of the achievements of Plastindia Foundation.

With best wishes,

Pradip Nayyar
Hony. Secretary

DA Review: Synthesis of Core-Shell Nanoparticles by Microemulsion Polymerisation

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INTRODUCTION

"A biological system can be exceedingly small. Many of the cells are very tiny, but they are very active; they manufacture various substances; they walk around; they wiggle; and they do all kinds of marvelous things - all on a very small scale. Also, they store information. Consider the possibility that we too can make a thing very small which does what we want - that we can manufacture an object that maneuvers at that level1."

Nanotechnology literally means any technology per-formed on a nanoscale that has applications in the real world. Nanotechnology encompasses the production and application of physical, chemical, and biological systems at scales ranging from individual atoms or molecules to submicron dimensions, as well as the integration of the resulting nanostructures into larger systems. Nanotechnology is likely to have a profound impact on our economy and society in the early twenty-first century, comparable to that of semiconductor technology, information technology, or cellular and molecular biology. Science and technology research in nanotechnology promises breakthroughs in such areas as materials and manufacturing, nanoelectronics, medicine and healthcare, energy, biotechnology, information technology, and national security. It is widely felt that nanotechnology will be the next industrial revolution1.

If a question arises in a mind, why nano? Then the answer is. The discovery of novel materials, processes, and phenomena at the nanoscale, as well as the development of new experimental and theoretical techniques for research provide fresh opportunities for the development of innovative nanosystems and nanostructured materials. Nano systems are expected to find various unique applications. Nano structured materials can be made with unique nanostructures and properties. This field is expected to open new venues in science and Technology1.

An emulsion is a product made from two immiscible liquids stabilized by a surfactant. The surfactant helps to reduce the surface tension between the oil phase and water phase. If the oil is dispersed in the water, the system is referred to as an oil-in-water (o/w) emulsion, and if the water is dispersed in the oil, the system is referred to as water-in-oil (w/o) emulsion. Generally, emulsions are opaque in appearance2.

Whether the emulsion will be w/o or o/w depends on the nature of the surfactant used and other factors. Emulsion systems are generally unstable, i.e. they separate over a certain period. The manufacture of emulsions generally involves the application of external energy, such as heating and vigorous stirring. The large amount of energy applied is further required to break up the particles of the dispersed phase into smaller droplets. Many scientists have studied the behavior of emulsions and how to enhance their stability. One way of enhancing the stability of an emulsion is by reducing the droplet size of the dispersed phase. This can be done by increasing the processing/stirring time or adding more surfactant to the system. However, both options have time and cost implications2.

In the early 1940s, Schulman added an alcohol to an emulsion system and the system turned from opaque to transparent. He discovered that the transparency of the emulsion was due to the decreased droplet size of the dispersed phase to about 10 nm. This is because the alcohol partitions itself between the surfactant molecules, thereby further reducing the surface tension to below zero. Hence microemulsions do not require external energy during their manufacture. He then named the system Microemulsion. Since then, scientists have studied the phase behaviour of these systems. Microemulsions are now widely applied and in the chemical industry, particularly in the cosmetics, pharmaceutical and oil industries. Most household and cosmetic products in everyday use, e.g. personal care products, slimming products, etc. are either microemulsions or emulsions. Microemulsion products are often preferred in the chemical industry because they are indefinitely stable and are easy to process. The formation of microemulsion requires four components in appropriate ratios, i.e. oil phase, water phase, surfactant and cosurfactant2.

Emulsion polymerization is certainly the most widely used process to prepare polymer colloids. The particle size of the

latexes usually ranges between 0.05 to0.5 mm and the mechanism and kinetics of the reaction have been extensively studied since 1930. The concept of polymerization in microemulsion appeared only around 1980, likely as a consequence of the numerous studies performed on microemulsion systems after the 1974 oil crisis. Since then, the field has developed rapidly as attested by the constant increase in the number of papers devoted to microemulsion polymerization. The interesting features of microemulsion, such as large internal interfacial area, optical transparency, thermodynamic stability, small domain length scales, and great variety of structures, result in unique microenvironments. Such microemulsion can be advantageously used to produce novel materials with interesting morphologies and polymers with specific properties[3-6].

. A primary goal of investigators has been to produce thermodynamically stable latexes in the nanosize range (50 nm) not attainable with classical emulsion polymerization process[4]. Micro latexes with such characteristics are desirable in certain applications, such as in drug delivery or micro encapsulation. It has also been of particular interest to prepare stable and uniform inverse latexes via inverse microemulsion polymerization, since the classical inverse emulsion technique is known to produce unstable latexes with broad particle size distributions. Another appealing aspect of microemulsion polymerization is the possibility to fix permanently the labile structure of these systems and to secure therein tightly solubilized molecules. In addition, the optical transparency and thermodynamic stability of micro-emulsions are advantageous for photochemical and other reactions. A major difference between emulsions and microemulsions comes from the amount of surfactant needed to stabilize the respective systems. Much more surfactant is needed for microemulsions (10% of the total mass), due to the necessity of stabilizing a large internal interfacial area. This is a drawback that can considerably restrict the potential uses of micro-emulsion polymerization since high solid contents and low surfactant levels are desirable for most applications[7]. However, this limitation is being decreased by the increasing use of reactive or polyme-rizable surfactants.

Microemulsion polymerization of monomers may be achieved by incorporating a monomer in any of the water and oil phases of the system. Replacing dispersed phase by a monomer in an o/w microemulsion produces spherical latex particles of optimum diameter. However, solid materials may be produced if the continuous phase is polymerized, entrapping the dispersed phase in its matrix. This latter approach that has been successfully used for producing solid materials by microemulsion poly-merization. Furthermore, copoly-merization of monomers may also be achieved by placing monomers in both the water and oil phases. This opens the way for producing copolymers and nanocomposites with new characteristics. The polymerization of microemulsions may be carried out by chemical, photochemical, and high-energy radiation techniques[5].

"Small is beautiful", today we know that small is not only beautiful but also powerful. With the range of applications that nanoparticles find in varied fields of engineering and science, nanoparticles seem a promising option when compared to the conventional materials used. Nanoparticles are particles that have at least one dimension in less than 100nm range. They have a high surface to volume ratio and thus mass transfer and heat transfer properties are better than bulk materials. Recently; core/shell nanoparticles are finding widespread application. There is a class of core/shell nanoparticle that has its entire constituent in the nanometer range. Core/shell nanoparticles are nanostructures that have core made of a material coated with another material. They are in the size range of 20nm-200nm. Also, composite structures with these core/shell particles embedded in a matrix material are in use. The necessity to shift to core/shell nanoparticles is the improvement in the properties[15].

2. Definition and Role of Surfactants

A surfactant is a molecule that is soluble in both oil and water phases. This is because surfactants contain both a water-miscible group and an oil-miscible group. They are often referred to as "schizophrenic molecules". The water-miscible part of a surfactant is called the hydrophilic group and the oil-miscible part is called the hydrophobic group[8].

The hydrophobic tail is mainly a series of CH_2 groups, which are non-polar, whereas the hydrophilic groups are polar molecules. The nature of the hydrophobic groups may be significantly more varied than that of the hydrophilic groups. Quite often they are long-chain hydrocarbon radicals.

2.1 Classifications of Surfactants

The hydrophilic part of the most effective soluble surfactants is often an ionic group. Ions have a strong affinity for water owing to their electrostatic attraction to the water dipoles and are capable of pulling a fairly long hydrocarbon into the solution with them. For instance, palmitic acid, which is virtually unionized, is insoluble in water whereas sodium palmitate, which is almost completely ionized, is soluble in water.

It is also possible to have non-ionic hydrophilic groups, which also exhibit a strong affinity for water; for example the monomer units of a poly (ethylene oxide) chain each show a modest affinity. Surfactants are classified as anionic, cationic, non-ionic or ampholytic acco-rding to the charge carried by the surface-active part of the molecule[8].

. In addition, surfactants are often named in relation to their technological application; hence names such as detergent, wetting agent, emulsifier and dispersant.

2.1.1 Non-ionic surfactants

Non-ionic surfactants do not contain a charge on the hydrophilic head. An example of a nonionic surfactant is alkyl dialkanolamide. It is a good wetting agent and solubilizer. An advantage enjoyed by the non-Ionics is that the lengths of both the hydrophilic and hydrophobic groups can be varied. Two of the most important features of non-ionic systems are as follows:

- They can accommodate brines of salinity much higher than can classic ionic

Systems

- The soft interactions between polar groups are relatively sensitive to any change in temperature - hence the delicate force balance that presides over the existence of the structures, and phase diagrams whose outlook may be

markedly temperature dependent[16].

2.1.2 Anionic surfactants

These are the most widely used class of surfactants in industrial applications due to their relatively low cost of manufacture and they are used in practically every type of detergent. For optimum detergency the hydrophobic chain is a linear alkyl group with a chain length in the region of 12–16 carbon atoms. Linear chains are preferred since they are more effective and more degradable than branched ones. The most commonly used hydrophilic groups are carboxylates, sulphates, sulphonates and phosphates. A general formula may be ascribed to anionic surfactants as follows:

Carboxylates: C_nH_{2n}+1COO-X

Sulphates: C_nH_{2n}+1OSO3-X

Sulphonates: C_nH_{2n}+1SO3-X

Phosphates: C_nH_{2n}+1OPO(OH)O_X

With n - 8–16 atoms and the counter ion X is usually Na+. Several other anionic surfactants are commercially available such as sulphosuccinates, sethionates and taurates and these are sometimes used for special applications[16].

2.1.3 Cationic surfactants

The most common cationic surfactants are the quaternary ammonium compounds with the general formula R'R''R'''R''''N+X_, where X_ is usually chloride ion and R represents alkyl groups. A common class of cationic is the alkyl trimethyl ammonium chloride, where R contains 8–18 C atoms, e.g. dodecyl trimethyl ammonium chloride, C12H25(CH3)3NCl. Another widely used cationic surfactant class is that containing two long-chain alkyl groups, i.e. dialkyl dimethyl ammonium chloride, with the alkyl groups having a chain length of 8–18 C atoms. These dialkyl surfactants are less soluble in water than the monoalkyl quaternary compounds, but they are commonly used in detergents as fabric softeners. A widely used cationic surfactant is alkyl dimethyl benzyl ammonium chloride (sometimes referred to as benzalkonium chloride. Cationic surfactants are generally water soluble when there is only one long alkyl group. They are generally compatible with most inorganic ions and hard water, but they are incompatible with metasilicates and highly condensed phosphates. They are also incompatible with protein-like materials. Cationics are generally stable to pH changes, both acid and alkaline. They are incompatible with most anionic surfactants, but they are compatible with nonionics. These cationic surfactants are insoluble in hydrocarbon oils. In contrast, cationic with two or more long alkyl chains are soluble in hydrocarbon solvents, but they become only dispersible in water (sometimes forming bilayer vesicle type structures). They are generally chemically stable and can tolerate electrolytes. The c.m.c. of cationic surfactants is close to that of anionics with the same alkyl chain length. The prime use of cationic surfactants is their tendency to adsorb at negatively charged surfaces, e.g. anticorrosive agents for steel, flotation collectors for mineral ores, dispersants for inorganic pigments, antistatic agents for plastics, other antistatic agents and fabric softeners, hair conditioners, anticaking agent for fertilizers and as bactericides[16].

2.2 Micelles and Critical Micelle Concentration

When a small amount of surfactant is added to the bulk of a system, the water will solubilize and disperse it. As more surfactant is added to the system, the system will become saturated with surfactant. Further addition of surfactant will start to form micelles9. A micelle is a small aggregation of surfactant molecules in the system. These molecules of surfactant are oriented with the lipophilic end of the surfactant towards the oil phase and the hydrophilic end towards the aqueous phase. Solutions of highly surface-active materials exhibit unusual physical properties. In dilute solutions the surfactant acts as a normal solute. At fairly well defined concentrations, however, abrupt changes in several physical properties, such as turbidity, electrical conductivity and surface tension, take place[2].

It has been pointed out that this seemingly anomalous behaviour could be explained in terms of the micelles of the surfactant ions, in which the lipophilic hydrocarbon chains are orientated towards the interior of the micelles, leaving the hydrophilic groups in contact with the aqueous medium. The concentration above which micelle formation becomes appreciable is termed the critical micelle concentration (c.m.c.). Micellisation is therefore an alternative mechanism to adsorption by which the interfacial energy of a surfactant solution may decrease. The c.m.c. can be determined by measuring any micelle-influenced physical property as a function of surfactant concentration. In practice, surface tension, electrical conductivity and solubilization measurements are the most popular. The choice of physical property will have a slight influence, as will the procedure adopted to determine the point of discontinuity[2].

2.3 Structure of micelles

Possible micelle structures include spherical, laminar and cylindrical arrangements. Micelles tend to be approximately spherical over a fair range of concentrations above the c.m.c. but there are often marked transitions to larger, non-spherical liquid crystals structures at high concentrations. Systems containing spherical micelles tend to have low viscosities. The free energies between micellar phases tend to be small and consequently the phase diagrams for these systems tend to be quite complicated and sensitive to additives. Some of the experimental evidence favouring the existence of spherical, liquid-like micelles is summarized as follows:

1. Critical micelle concentration and the size of the micelle depend mostly on the nature of the lyophobic part of the surfactant.

2. The number of molecules in a micelle of a given surfactant shows a very narrow distribution.

3. The length of the surfactant's hydrocarbon chain will dictate the radius of a spherical micelle. This in turn determines the spacing of the outer polar groups. For example, a dodecyl sulphate group would be expected to consist of approximately one-third sulphate groups and two-thirds hydrocarbons[8-10].

2.4 Factors influencing the critical micelle concentration

increasing the hydrophobic part of the surfactant molecules favours micelle formation. In an aqueous medium, the c.m.c. of an ionic surfactant is approximately halved by the addition of each CH^2 group. For non-ionic surfactants, this effect is even more pronounced. This trend usually continues up to about the C16 member. Above the C18 member, the c.m.c. tends to be

approximately constant[10].

with ionic micelles, the addition of simple electrolytes reduces the repulsion between the charged groups at the surface of the micelle by the screening action of the added ions. The c.m.c. is therefore lowered.

The addition of organic molecules can affect the c.m.c. in a variety of ways. The most pronounced changes are effected by those molecules (medium chain-length alcohols) that can be incorporated into the outer regions of the micelle. There they can reduce electrostatic repulsion and steric hindrance, thus lowering the c.m.c. Micelles containing more than one surfactant often form readily with a c.m.c. lower than any of the c.m.c.'s of the pure constituents[11].

2.5 Emulsions

The term emulsion usually refers to a dispersed system of two or more immiscible liquids (such as oil and water) in which one liquid in the form of droplets is homogeneously dispersed in another one12-13, Since such a dispersed system often appears milky, the term emulsion is adopted. Emulsions are of two distinct types: a dispersion of fine oil droplets in an aqueous medium, called an oil-in-water (o/w) emulsion, or one of aqueous droplets in oil, called water-in-oil (w/o) emulsion.

The type of emulsion formed depends on a number of factors. If the ratio of the amounts of the two phases is very low, the phase present in small amounts is often the dispersed phase; if the phase volumes are roughly equal, other factors such as surfactant type determine which type of emulsion is formed. However, this is not always the case.

It is usually possible to determine the type of emulsion by examining the effect of diluting it with one of the phases. A w/o emulsion is miscible with oil and an o/w is miscible with water. For instance, milk may be diluted with water, which shows that it is an o/w emulsion, whereas mayonnaise, a w/o emulsion, can be diluted with oil. There are also emulsions that are called multiple emulsions14. Multiple emulsions are complex systems that can be considered as emulsions of emulsions. They are formed from a dispersion of droplets which themselves contain smaller droplets of a liquid identical, or similar, to the external continuous phase.

2.6 Microemulsions

Microemulsions are a special class of "dispersions" (transparent or translucent) that actually have little in common with emulsions. They are better described as "swollen micelles". The term micro-emulsion was first introduced by Hoar and Schulman, who discovered that by titration of a milky emulsion (stabilized by soap such as potassium oleate) with a medium-chain alcohol, such as pentanol or hexanol, a transparent or translucent system was produced. The final transparent or translucent system is a W/O microemulsion (Scheme1)[16]

A convenient way to describe microemulsions is to compare them with micelles, the latter, which are thermodynamically stable, may consist of spherical units with a radius that is usually less than 5 nm. Two types of micelles may be considered: normal micelles with the hydrocarbon tails forming the core and the polar head groups in contact with the aqueous medium and reverse micelles (formed in nonpolar media) with a water core containing the polar head groups and the hydrocarbon tails now in contact with the oil. Normal micelles can solubilise oil in the hydrocarbon core, forming O/W microemulsions, whereas reverse micelles can solubilise water to form a W/O microemulsion. Figure 1 gives a schematic representation of these systems. Roughly, the dimensions of micelles, micellar solutions and macroemulsions are: micelles, $R < 5$ nm (they scatter little light and are transparent), macroemulsions, $R > 50$ nm (opaque and milky), and micellar solutions or microemulsions, 5–50 nm (transparent, 5–10 nm, translucent 10–50 nm)[16].

The classification of microemulsions based on size is not adequate. Whether a system is transparent or translucent depends not only on the size but also on the difference in refractive index between the oil and the water phases. A microemulsion with small size (in the region of 10 nm) may appear translucent if the difference in refractive index between the oil and the water is large (note that the intensity of light scattered depends on the size and an optical constant that is given by the difference in refractive index between oil and water). Relatively large microemulsion droplets (in the region of 50 nm) may appear transparent if the refractive index difference is very small16.

2.7 Factors affecting the formation of microemulsions

2.7.1 Effect of surfactant nature

The formation of a microemulsion is strongly dependent on the chemical nature of both the surfactants and the oil. It is studied that solubilization of w/o microemulsions formed with mixed surfactants containing one anionic and one cationic surfactant and an alcohol, as a function of the alkyl chain length of oil and mixed surfactants (sodium dodecyl sulphate [SDS] and cetyltri-methylammonium bromide [CTAB]). They found that the solubilization of water in microemulsion systems increases significantly with the mixed surfactants. This is due to the synergistic effect resulting from the strong Coulombic interactions between cationic and anionic surfactants[16].

2.7.2 Effect of cosurfactant

Most microemulsions appear to form readily in the presence of a cosurfactant. It is asserted that this material partitions itself between the oil phase and the interface. In so doing it substantially changes the composition of the oil so that its interfacial tension with water is reduced. Binding of alcohol molecules to surfactant aggregates decreases their interfacial free energy and enhances the solubility of water and oil in w/o and o/w microemulsions respectively. The distribution of alcohols between the aggregates, oil and water of microemulsions depends on the chain length of the alcohols and hydrocarbons[16].

Most commonly used cosurfactant is medium-chain alcohols. Materials such as short-chain fatty acids and alcohols are soluble in both water and oil (e.g. paraffin hydrocarbons) solvents. A molecule with two distinct parts, which are relatively polar and nonpolar, respectively, is called an amphiphile. This name is often reserved for molecules with easily perceptible surface activity at the air-water interface, i.e. Molecules that preferentially absorb from aqueous solution into the air-water interface and lower its tension. Although the lower-molecular-weight alcohols such as methanol, through hexanol, are not generally classified as surfactants, they are in fact surface active at the air-water interface. They are certainly amphiphiles, possessing both hydrophilic and lipophilic

moieties[16].

The hydrocarbon part of the molecule is responsible for its solubility in oil, while the polar -COOH or -OH group has sufficient affinity to water to drag a short-length non-polar hydrocarbon chain into aqueous solution with it. If these molecules become located at the oil water interface, they are able to locate their hydrophilic head groups in the aqueous phase and allow the lipophile hydrocarbon chains to escape into the oil phase. In general, the longer the hydrocarbon chain, the greater is the tendency for the alcohol molecules to adsorb the air water surface and, hence, lower the surface tension. Most studies of alcohol-containing o/w and w/o microemulsions concluded with a fast exchange of the alcohol between the interfacial films, the continuous phase or the dispersed phase[16].

2.8 Application of microemulsions

In recent years, micellar solutions and microemulsions have been investigated as reaction media for various chemical reactions, including polymerization. Early work was carried out in the 1970s. Among these investigations, a particularly challenging field was the use of microemulsions in biocatalysis. It has been shown that three aspects can describe the influence of structured fluids on the chemical reactions:

- Solubilization of a broad spectrum of substances in a homogeneous

System to overcome reagent incompatibility problems.

- Enhancement of the specific rate of reaction due to the partitioning and

Concentration of the reactants and products.

- The structure of the fluid, which influences reaction region selectivity due to the orientation of the reactants at the interfacial region.

Microemulsions have been employed in various pharmaceutical techniques, including drug delivery. In a study it was established that many enzymes could be entrapped in w/o microemulsions or reverse micelles, retaining their catalytic activity.

Among the enzymes studied to date, lipases are the most attractive due to their numerous biotechnological applications in the preparation of fine chemicals, and in the food and pharmaceutical industries. One of the most intensively studied aspects has been the technique of solubilizing enzymes in w/o microemulsions. A major attraction of this procedure is that the lipase is dispersed at the molecular level, rather than as a solid aggregate, in a thermodynamically stable solution. This solution is capable of solubilizing polar, a polar and interracially active substrates. The main advantages of this system are the possibility of providing the enzyme with an adequate environment, thereby protecting it against denaturation by organic solvents. Microemulsions have found application in metal extractions and the oil recovery process. They have also been studied extensively in the synthesis of nanometer-size particles.

In a study nanometer particles were prepared of Fe3O4 in Aerosol-OT/water/iso-octane w/o microemulsions. Spherical copper nanoparticles were synthesized in an SDS/isopentanol /cyclohexane/water microemulsion with sodium borohydride as a reducing agent. Various microemulsion formulations were evaluated as reaction media for the synthesis of the surface active compound decyl sulphonate from decyl bromide and sodium sulphite. The reaction rate was reported to be fast, both in w/o microemulsions and in bicontinuous microemulsions based on non-ionic surfactants[18-19].

2.9. CORE-SHELL

Core/shell polymers typically consist of at least two main polymeric domains: one usually having a low-glass transition temperature (Tg) and another with a high-Tg, which are chosen to be lower and higher, respectively, than the working temperature Core/shell polymer particles can be used in a wide range of applications because they

Exhibit tunable and/or improved chemical and mechanical properties compared to those of the parent-component polymers. Core/shell particles differing in glass transition temperatures are used in coatings and non-porous homogeneous films, as modifiers of the mechanical properties of thermoplastics and in the manufacture of nano composite materials. Typically, a two-stage emulsion polymerization process is used to produce core/shell polymers, but also emulsion blending has been employed. Microemulsion polymerization is an alternative process for producing core/shell polymer particles of nanosize scale. In this process, latexes containing tiny particles (!50 nm), each composed of a few macromolecules of high molecular weight (O106 Da), are produced, over which other(s) monomer(s) can be added in batch or semicontinuously to form the shell .However, the low polymer content and the large amount of surfactant required.

In microemulsion polymerization the synthesis of core/shell polymer particles of nanosize scale by a two-stage micro-emulsion polymerization process; these materials

had better mechanical properties than those of core/shell polymers of similar composition and core/shell ratio made by emulsion polymerization. The core-shell polymers synthesized by microemulsion polymerization are more rigid and harder than

Core-shell polymers of similar composition are made by emulsion polymerization. Core/shell polymers are attracting scientific and industrial interest because their chemical and mechanical properties[17].

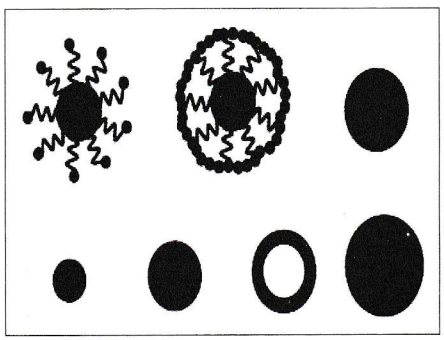

Figure 1. Variety of core shell particles.

a, Surface-modified core particles anchored with shell particles.

b, More shell particles reduce onto core to form a complete shell.

c, Smooth coating of dielectric core with shell.

d, Encapsulation of very small particles with dielectric material.

e, Embedding number of small particles inside a single dielectric particle.

f, Quantum bubble.

g, Multishell particle.

Application of core-shell:-

Applications such as

- paints,
- adhesives,
- paper and textile manufacturing and,
- Impact modifiers.

2.9.1 Effect of initiator concentration on particle size of core-shell Nanoparticles

APS (Thermal initiator) or Ascorbic acid/H2O2 (Redox initiator) concentration in the initial Microemulsion was varied from 0.5 to 2 % wt., particle size of core-shell micro latexes increased gradually and poly dispersity decreased as (APS) changed from 0.5 to 2 wt %. The poly dispersity is inversely proportional to the particle size and initiator concentration. As particle size decreases poly dispersity increases. we have seen that polydispersity of redox initiator system is broader in comparison with thermal initiator system. However, at [APS] of 2 wt%, the particle size was relatively large, and the product was rather turbid in comparison with others. This result may be due to the occurrence of inter-particle aggregation, i.e., at high initiator concentration, the nucleation was very fast and thus the number of small polymer-containing particle was also very large, increasing surface area above the level that could be stabilized by only 1 wt% SDS and resulting in aggregation.

2.9.2 Effect of SDS/n-Pentanol amount on particle size of core-shell Nonoparticles.

The preparation and study of SDS/ n-Pentanol (surfactant/co-surfactant) content was varied from 10% to 20%, while. The temperature is kept for thermal initiator at 75°C and Redox initiator at 35°C. As the percentage of SDS increases the particle size decreases with decrease in polydispersity index. It is clearly shown that the particle size & polydispersity index can be achieved in a best way for Redox initiator system.

2.9.3 Effect of reaction temperature on particle size of core-shell Nanoparticles

The reaction temperatures were changed from 70 to 90°C, while keeping other experimental conditions unchanged. The dependence of particle size on reaction temperature. Dm/Dn decreased as temperature increased from 70 to 80°C. When polymerized at 90°C, a core-shell nanoparticle with large particle size was produced. A possible explanation is that the concentration of small particles being initiated at 90°C is too large for the available surfactant to stabilize as individual particle, analogous to the situation with high initiator levels.

2.9.4 Change of particle size of core-shell Nanoparticles during polymerization

The core-shell particles formed at early stage of polymerization in microemulsion can be regarded as the seeds for further growth of polymer-containing particles. The dropwise addition of monomer, which could continuously provide monomer to the microemulsion so that the growth of polymer particles could continue. This is much different with what we have observed SDS/1-pentanol/H_2O initiated by a redox initiator at ambient temperature, D_n does not change throughout the entire reaction period possibly because the free radicals, either newly formed or transferred from polymeric radicals, are likely to enter the uninitiated monomer-containing micelles, where they would start growth of a new polymeric particle, instead of staying within the particles where they were formed, thus increasing the particle sizes. Because the continuous nucleation was almost along the whole polymerization period, the particle size distribution was much broader (D_m/D_n) the main factor giving rise to this phenomenon may be the low polymerization temp-erature, besides the solubility of monomer and initiator.

2.10 CASE STUDY Composition effects on the mechanical properties of microemulsion-made Core/shell polymers.

Experimental

1) A two-stage semi-continuous microemulsion polymerization process was used for the synthesis of the core/shell polymers.

2) First, microemulsions containing 14.1 wt% DTAB, 79.9 wt% H2O and 6 wt% styrene or butyl acrylate were polymerized at 60 8C with V-50 (wV-50/wmonomerZ 0.01) in the presence of small amounts of ALMA (wALMA/ wmonomerZ0.01) to produce slightly crosslinked polymer To increase the solid content in the latexes, more monomer was added semi-continuously for over 6 h under monomerstarved conditions. With this technique, the solid content was increased from 5.5 to 36 wt%

3) After completion of the reaction, the high solid-content latex is diluted with water to 10% solids and used as the seed in the second stage. The required amount of BA (or St) to obtain the desired composition was added semi-continuously in the second stage to form the shell. Then, the core/shell polymer was precipitated by adding excess methanol, filtered, washed to eliminate adsorbed surfactant, and dried in a vacuum oven.

DTAB-Dodecyltrimethylammonium bromide

V-50 2, 20-azobis (2amidinopropane) hydrochloride

ALMA-Allyl methacrylate

EXPERIMENTAL SETUP-

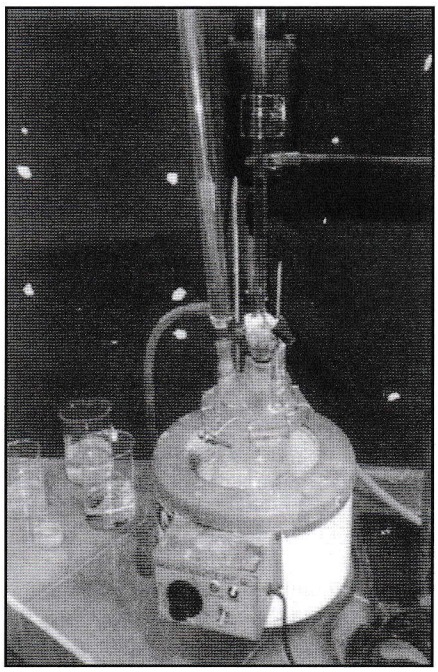

Figure 2: Synthesis of nano core shell by microemulsion process

Results and discussion-

Table 1 reports the conversions at the end of stages 1 and 2 for the hard-core/soft-shell and soft-core/hard-shell polymers studied here. Independently of the monomer used to form the seeds and the core/shell composition, final conversions at the first and second stages

are high (>90%).

Table 2 also shows that at the end of the second stage, particle size has increased but it remains within the range of microemulsion-made particle size. This growth suggests that the monomer added during the second stage polymerizes over the seed particles to form a core shell structure. In most cases (Table 2), indicating that most of the monomer added in the second stage is incorporated over the seed particles. The actual volume fraction—based on the polymer produced in the second stage, was calculated from the measured particle diameters at the end of the first and second stages.

Core/shell lattices with 14–23% solids were obtained depending on the amount of the second monomer added to obtain the desired composition17.

DSC detected two glass transition temperatures, which is an indication of the presence of two segregated polymer phases in the material. The glass transition temperatures of the core/shell polymers with different compositions are reported in Table 3. Clearly, the lower transition temperature at ca. K50 8C corresponds to poly(butyl acrylate) whereas the higher one (100 8C) corresponds to the Tg of polystyrene. The particle growth and the presence of two polymer phases suggest that a core-shell structure[17].

Table 4 summarizes the calculations of the interfacial free energy change for the three morphologies considered and the different compositions of the core/shell examined. When PBA forms the seeds, the minimum interfacial free energy change corresponds to the core/shell structure, i.e. the PSt incorporates over the seeds. This PBA-core/PSt shell morphology is confirmed by TEM, where the dark domains correspond to PSt and the light domains to PBA (Fig. 5). Moreover particle size estimated from TEM is similar to that measured by QLS. However, when PSt forms the seeds, the minimum interfacial free energy change corresponds to the inverted core/shell structure, so phase inversion should occur.

The sub-indexes CS, ICS and IP stand for core/shell, inverted core/shell and individual particles respectively[17].

This PBA-core/PSt shell morphology is confirmed by TEM, where the dark domains correspond to PSt and the light domains to PBA

Core / Shell Composition	Conversion (%) Stage 1	Conversion (%) Stage 3
PSt / PBA 70/30	94.3	98.9
PSt / PBA 60/40	94.3	94.8
PSt / PBA 50/50	93.8	99.7
Pst / PBA 40/60	96.0	94.3
PBA / Pst 70 /30	96.0	94.1
PBA / Pst 60 / 40	96.0	96.3
PBA / PSt 50 / 50	96.0	90.6
PBA / Pst 40 / 60	96.0	90.7

Table 1 - Conversions obtained at the end of stages 1 and 2 for the different core/shell Formulations.

Core / Shell Composition	% Solid stage 1	Dpz =(nm) Stage 1	% Solids stage 2	Dpz(nm)a stage 2	Dpz (nm)b stage 2
PSt/PBA 70/30	32.4	42.0	15.0	45.3	47.7
PSt/PBA 60/40	32.4	42.0	16.3	49.5	49.5
PSt/PBA 50/50	39.2	47.3	19.8	58.2	60.6
PSt/PBA 40/60	39.2	47.3	22.7	59.2	63.9
PBA/PSt 70/30	39.0	41.7	14.5	46.9	47.0
PBA/PSt 60/40	39.0	41.7	16.9	46.9	50.1
PBA/PSt 50/50	39.0	41.7	18.3	51.2	51.8
PBA/PSt 40/60	39.0	41.7	19.3	53.8	56.6

Table 2 - Solid content and average particle size at the end of stages 1 and 2, and volume fraction of polymer formed during the second stage, for the core-shell polymers prepared by microemulsion polymerization.

Core / Shell Composition	Tg1 (0C)	Tg2 (0C)
PSt / PBA 60/40	-45.9	96.6
PSt / PBA 50/50	-48.0	99.3
PSt / PBA 40/60	-52.0	101.4
Pst / PBA 70/30	-51.2	95.1
PBA / Pst 60/40	-51.4	93.8
PBA / Pst 50/50	-53.3.0	101.5
PBA / PSt 40 / 60	-51.1	98.7

Table 3 - Glass transition temperatures of core-shell polymers with different Compositions

Core / Shell composition	(Ay)cs	(Ay)ics (m N/m)	(Ay)ip (m N/m)	Predicted morphology
PSt/PBA 70/30	7.96	3.85	9.21	ICS
PSt/PBA 60/40	8.56	4.44	10.21	ICS
PSt/PBA 50/50	16.00	11.62	20.77	ICS
PSt/PBA 40/60	17.22	12.78	22.33	ICS
PBA/PSt 70/30	3.93	6.68	11.33	CS
PBA/PSt 60/40	7.29	11.02	19.84	CS
PBA/PSt 50/50	8.95	12.83	18.00	CS
PBA/PSt 40/60	11.99	16.79	21.50	CS

Table 4 - Interfacial free energy changes for different morphologies of the different core/shell compositions prepared here

Contd. to Page 23

GLIMPSES

A Visit Report of China Plas'12

IPF was offered a 9 sq. mtr stall on complimentary basis as per our barter deal at China plas'12 held at Sanghai, China from 18th to 21st April '12. Our stall in Hall W 3, Stall No R 55 was managed by IPF President Sri Rajesh Mohta and myself alongwith support from our greater China Agents Messers Pilatus of Taiwan. The objective of taking a stall was to attract overseas visitors and exhibitors. To an extent our purpose was achieved since our agent has already started receiving enquiries for participation. Leaflets in Chinese were distributed by agent to prospective exhibitors and from the stall. Indplas'12 promotional film with Chinese subtitle was being shown throughout the exhibition period.

China continues to be second largest consumer of Polymers. Wood Plastic Composite is picking up very fast but we could not see any Wood Plastic Composite plant out of plastic scrap which IPF is planning at IPF Knowledge Centre. Sri R A Lohia (Past President, IPF), Sri Rajesh Mohta and undersigned even visited a factory 150 km away from Sanghai but were not satisfied with what they are offering.

Chinaplas'12 is growing year after year both in area and number of exhibitors. Chinaplas '12 had over 2600 exhibitors spread over area of 2.10 lac sq mtr and very well managed. It had presence from all over the world with Indian visitors in large numbers but only Ten Indian exhibitors including giant Reliance Industries Ltd.

China consumes over 50 million tons per annum of Polymers with per capita consumption of 36 kgs. Their machines are very well received in developing countries for their output and reasonable prices as compared to supplies from developed countries. China has overtaken both Germany & Italy and are now the largest exporters of Plastic Processing Machines in the world.

Their well equipped exhibition centres in prime cities are helping their local industries to grow. With this success they are going to build Exhibition Centres in Two Tier Cities of China. In India we still have to depend on Pragati Maidan, New Delhi built in 60's with poor infrastructure and the latest ones built in other Indian cities are too small for Indian Plastic Industry to showcase their development.

IPF had taken a delegation of 23 members through SOTC with Convenor, Shri Dipak Gathani not able to join but made excellent arrangements with good hotels and Indian food available on all days including lunch at fair ground. In his absence Sri Rishi Ondhia took care of all delegates and all were extremely pleased with his coordination and arrangements. Visit was also planned to see great wall of China at Beijing and other interesting places both at Beijing and Sanghai.

Jai Hind.

Amar Seth
Chairman - Indplas' 12 EOC & IPF Knowledge Centre

PRESS CONFERENCE OF INDPLAS'12

A Press Conference was organised by Indian Plastics Federation at IPF Conference Hall on 25th April, 2012 for promotion of Indplas'12 - 6th International Plastics exhibition held on 5th October to 8th October, 2012 at Science City, Kolkata. Around 15 persons from the media attended the press conference and many conducted phone-in interviews with Chairman Indplas'12 E.O.C. Mr. Amar Seth. Mr. Chie Yien Huang, Kolkata representative of TAITRA was the Chief Guest. The objectives of holding the exhibition i.e to generate funds for development of IPF Knowledge Centre at Poly Park site Sankrail, Howrah have been very well highlighted by the media. The press conference was reported in 7 print media and 7 online media. The press conference was a great success.

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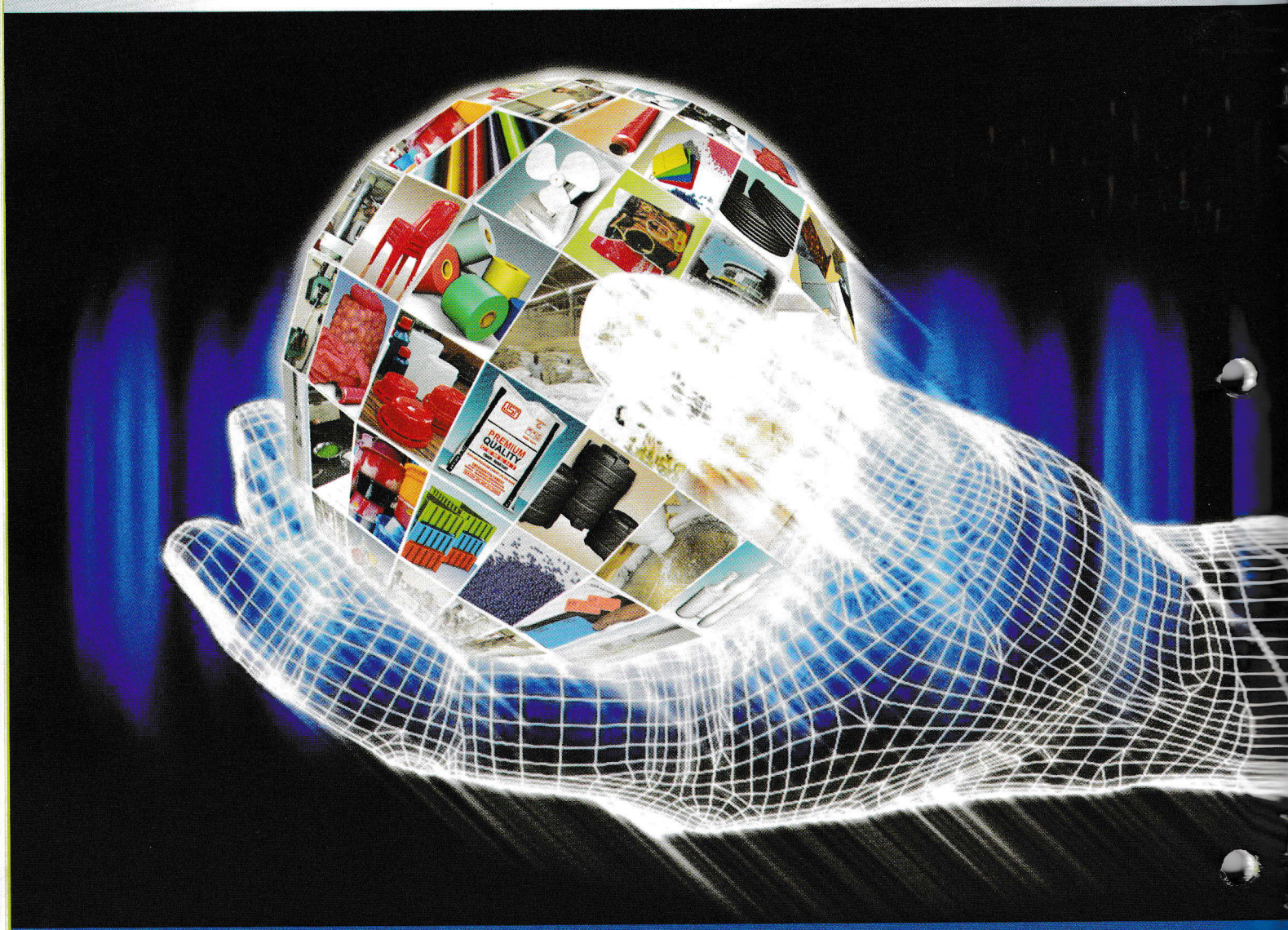

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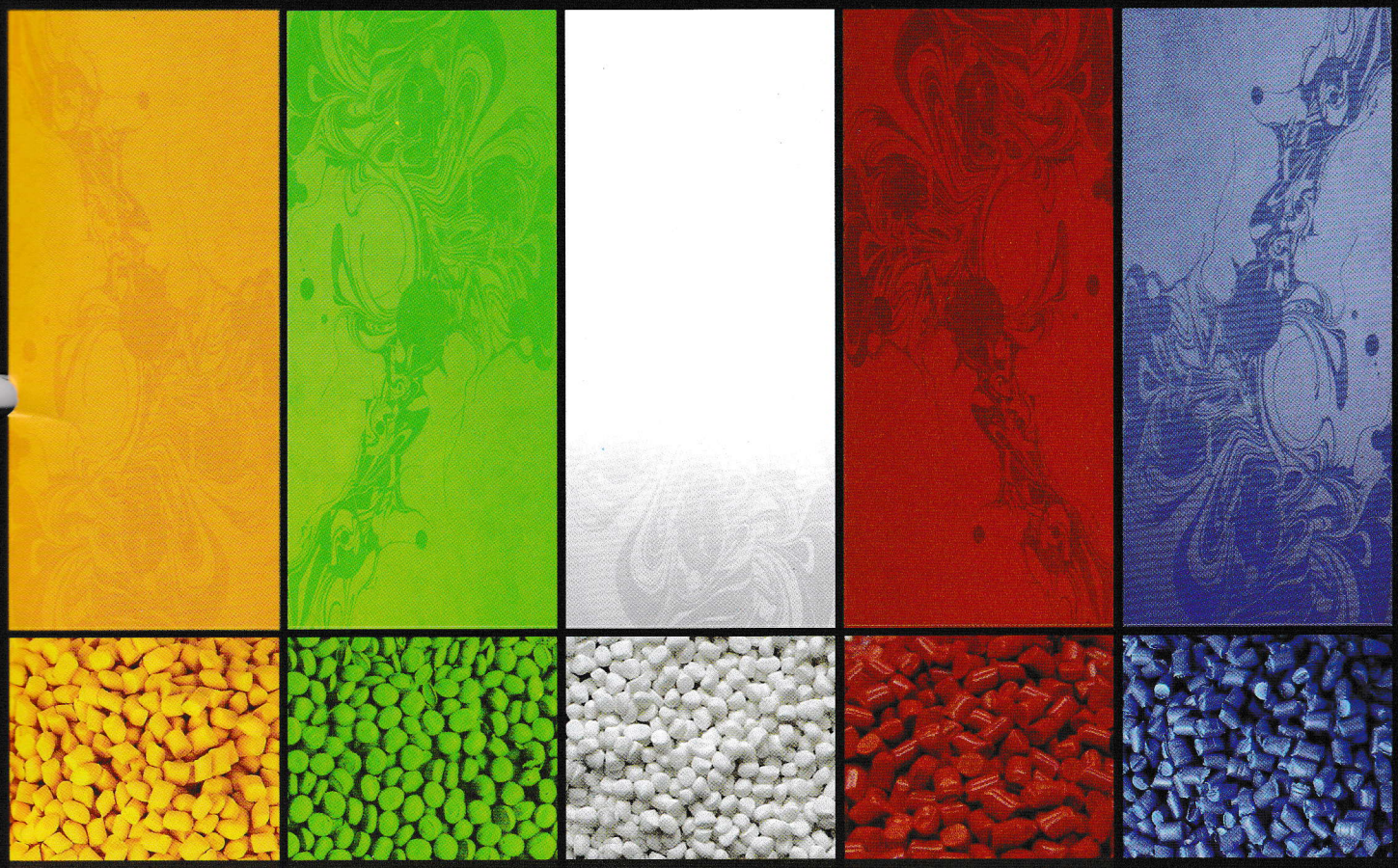

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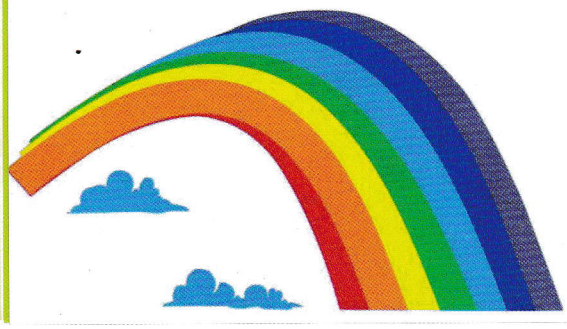

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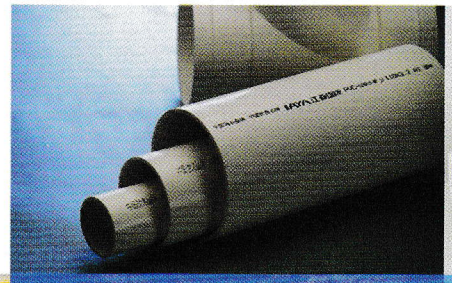


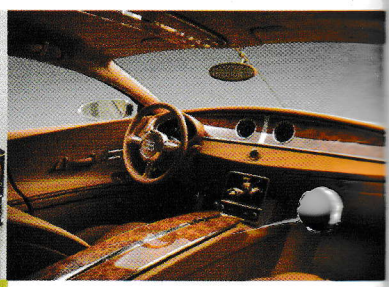


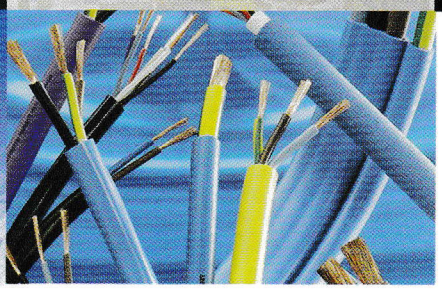

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(Fig.5). Moreover particle size estimated from TEM is similar to that measured by QLS. However, when PSt forms the seeds, the minimum interfacial free energy change

Corresponds to the inverted core/shell structure, so phase inversion should occur.

(Fig.6) shows that in this case also the PSt (dark domains) is in the outer layer, although incomplete inverted core/shell morphology is observed we have to conclude, based on this analysis and TEM observations, that PSt is mainly located in the shell of these materials notwithstanding the order of addition of the monomers during the preparation of the core/shell structure the resulting morphology depends on, among other factors, on the mode of addition of the second monomer (monomer absorption versus dropwise method) over the seed

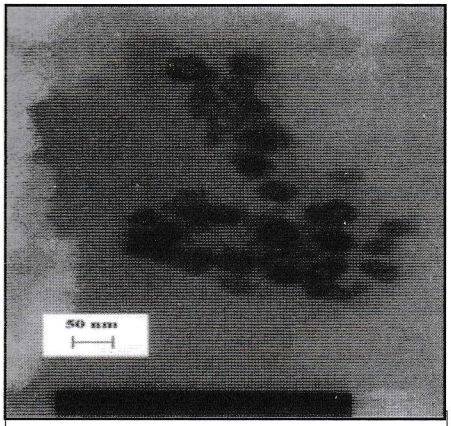


Fig. 5. TEM photography of PBA / Pst core / shell polymer particles.

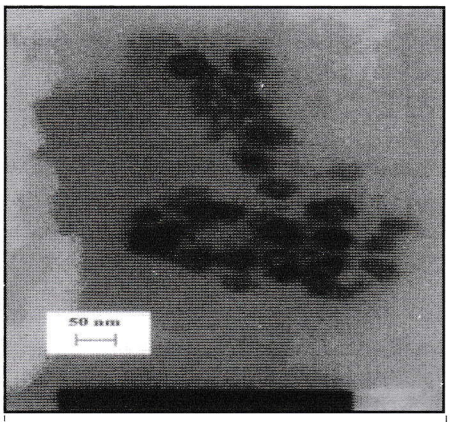


Fig. 6. TEM photography of Pst / PBA core shell polymer particles.

and aging. Indeed, Fig. 6 confirms that incomplete inversion occurs17.

Hardness and impact energy results

Core / Shell Composition	Young Modulus (MPa)	Ultimate Strain %	Tensile Stress (MPa)	Hardness Shore A	Impact Energy (J/c
PSt/PBA 70/30	877.2	1.9	14.6	95.8	0.09
PSt/PBA 60/40	312.5	29.5	6.5	92.2	0.27
PSt/PBA 50/50	166.7	22.9	4.4	81.0	1.19
PSt/PBA 40/60	10.9	137.3	0.6	59.2	24.02
PBA/PSt 70/30	10.0	73.3	14.0	60.8	14.34
PBA/PSt 60/40	178.6	54.5	7.2	83.7	11.9
PBA/PSt 50/50	401.6	33.0	13.5	85.7	1.14
PBA/PSt 40/60	606.1	1.70	9.5	91.0	0.7
PBA/PSt 0/100	2200.0	0.9	36.5	96.0	0.05

Table 5 - Hardness shore A and impact energy of core-shell polymers

for both types of core/shell polymers are shown in Table 5. Due to its rubbery nature, poly(butyl acrylate) does not break in the impact test. As expected, the hardness increases and impact ener decreases with increasing PSt content, regardless of its location, the tensile modulus (E), the ultimate elongation,

tensile stress, impact energy and hardness of the core-shell materials are summarized in Table 5[17].

2.11.Conclusion-

In this work we demonstrated that is possible to obtain core-shell polymers of polystyrene/polywith high solid content by a two-stage microemulsion polymerization. (butyl acrylate) Elsewhere we reported that PSt-core/PBA-shell polymers made by microemulsion polymerization were tougher and with similar elongations at break than emulsion-made polymers of similar composition [16]. Here we examined the mechanical properties of core-shell PSt/PBA polymers as a function of composition and location of the soft and brittle polymers. Our results indicate that by varying the core-shell composition and the initial location of the polymers, it is possible to obtain materials with a broad range of mechanical properties. These polymer particles are promising for using in coatings, adhesives or impact-resistance plastics due to their mechanical characteristics and small sizes.

NEWS - INTERNATIONAL PLASTIC INDUSTRY

CHINA

China Factory for Zip-Pak

Zip-Pak, a globally known name in resealable solutions recently announced the opening of its first China factory in Guangzhou. The new facility will localize production of the company's cost-effective and high quality resealable zipper closures.

Zip-Pak also introduced a new consulting group, the Package Realization Team recently. The team will help brand owners switch from existing package styles to consumer-preferred resealable flexible formats. For each unique project, a unique team is assembled to consult with consumer product goods (CPG) companies and retailers on how to implement cost-effective and efficient resealable closure solutions.

China Exports 47% more Plastic Scrap

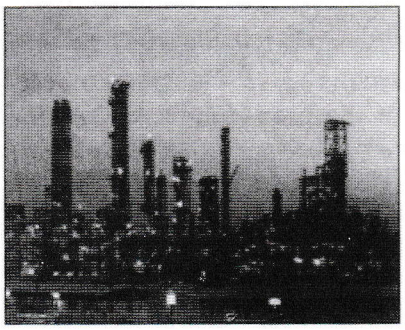
Total scrap plastic exports were up 47 percent in the seven months of the year, compared to the same period in 2010, according to the Plastics Recycling Committee of CPPIA.

Chinese scrap plastic exports were 16,755 tons in Q1, 19,665 tons in Q2 and a whopping 8,027 tons in July alone. This brings the total volume of plastic scrap exported by China to 44,447 tons through July.

However the value of the scrap China has exported is down significantly, compared to 2010. Shenzen, the largest export hub for Chinese plastic scrap, reports the value of the material exported thus far in 2011, is down 47 percent compared to the same period in 2010, to $7.2 billion USD. The value of plastic scrap exported through Shanghai, at $690 million, is also down 47 percent year-over-year.

China's Zhejiang Hengyi to Build Oil Refinery and Aromatics Cracker Complex

The Brunei Economic Development Board (BEDB) has announced that His Majesty The Sultan and Yang Di-Pertuan of Brunei Darussalam has consented to the establishment of a $ 2.5 billion oil refinery and aromatics cracker project will be developed in two phases by Zhejiang Hengyi Group Co Ltd (Zhejiang Hengyi), a leading private Chinese company. It will be located on a 260-hectare site at Pulau Muara Besar.



With a production capacity of about 135,000 bpd, the first phase of the refinery and aromatics cracker project will comprise the production of petroleum products such as gasoline, diesel and jet fuel, as well as paraxylene and benzene, which are mainly used in textile production.

The company has also offered a local equity participation of up to 30 per cent in the project. Following successful completion of Phase I, the company plans a further investment of $3.5 billion for expansion of the refinery to allow for production of olefins.

Hengyi Petrochemical to set up PTA and Caprolactam Projects

China's Zhejiang Hengyi Petrochemical is planning to set up a project for the production of purified terephthalic acid (PTA) with a production capacity of 1.5-mtpa. The PTA production capacity of the company's subsidiary, Zhejiang Yisheng Petrochemical, will increase to 2.56-mtpa upon completion of the project. The PTA project is estimated to generate sales revenue of 10.5 bn yuan ($1.6-bn) with nearly 1.27 bn yuan ($196-mn) of net profit. Hengyi has also announced setting up of a facility for production of 90,000-tpa of fibre. This factory will include two fibre factories, which will house five polyester filament production lines. The company also plans to invest in two lines to produce caprolactam taking the overall caprolactam production capacity to 100,000-tpa.

SOUTH- EAST / EAST ASIA

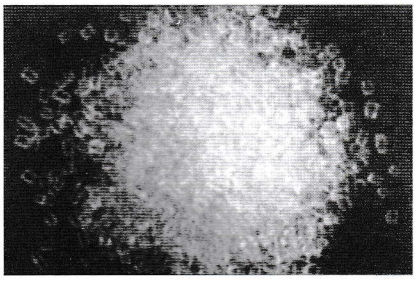
Dow's Polyolefin Elastomers Plant in Thailand

The Dow Chemical Company has begun commercial operation of its new world-scale speciality elastomers plant in Rayong Province, Thailand . A project of the SCG-Dow joint venture, the new manufacturing operation will add dedicated capacity to meet growing world-wide customer demand for a full range of elastomer products. A global leader in elastomer innovation, Dow offers technologically advanced plastomers and elastomers. The opening of the plant will increase Dow's global capacity for polyolefin elastomers to over 800-ktpa.

Kraton Performance Polymers and Formosa in Joint Venture for HSBC Manufacture

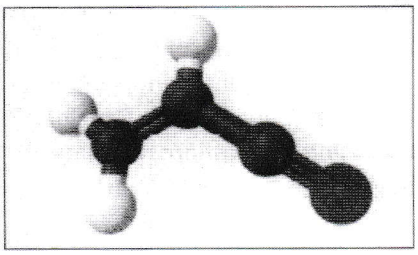
Kraton Performance Polymers, Inc. has announced the execution of a framework agreement with Formosa Petrochemicals Corp. (FPCC), which sets forth the major terms and conditions which will, upon completion of necessary definitive agreements, govern the formation of a 50/50 joint venture between the two companies to construct and operate a 30 kiloton hydrogenated styrenic block copolymer ("HSBC") plant to be located in Mailiao, Taiwan. The agreement establishes a framework between Kraton and FPCC governing all commercial, operational, technical and management aspects of the planned joint venture company. Kraton and FPCC expect to finalize documentation by December 31, 2011 and currently plan to have the plant operational in the second half of 2013. The cost of the plant is currently expected to be in the range of US$165-200 million.

Burel Industries Selects UNIPOL™ PP Process Technology for Malaysian Facility



Burel Industries has selected UNIPOL™ Polypropylene (PP) Process Technology from DOW Chemical Company for its new 250,000 tonnes per annum Polypropylene facility at Gebang Industrial Park in Kuantan, Malaysia. The plant will be designed to produce homopolymers as well as random and impact copolymers and will become operational by 2013/2014.

Japan's Asahi, Mitsubishi Corp and SABIC Join to Expand Petrochemical Production Portfolio



Japan's Asahi Kasei Corp and Mitsubishi Corp have partnered with Saudi Basic Industries Corp (SABIC) to set up a joint venture for the production of acrylonitrile (ACN) in Saudi Arabia. The production capacity will be 200,000 Tonnes Per Annum (TPA) of ACN and 40,000 TPA of sodium cyanide in AL Jubail. Sodium cyanide will be produced from hydrogen cyanide that is produced as a byproduct of ACN production. SABIC will hold 50 per cent stake in the new company, while the two Japanese partners will hold 25 per cent stake each. The Companies will begin the basic engineering design and take a final investment decision in 2012.

This is part of Asahi's strategy to take the number one position globally in the ACN market, and to meet rising demand in the Middle East and North Africa, as well as from Asian markets.

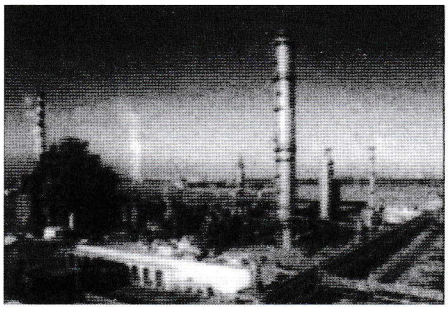
The new company, Saudi Japanese Acrylonitrile Co (Shrouq), is planned with a paid-up capital of SR 40 million and will help SABIC diversify its petrochemical portfolio to Acrylonitrile Butadiene Styrene (ABS), carbon fibre, acrylic fibre and acrylamide.

Marketing Company of Borouge Gets New CEO

Borouge, a leading provider of innovative, value creating plastics solutions, has appointed Wim Roels to lead its Marketing Company (Borouge Pte) based in Singapore with effect from July 1, 2011. Wim Roels replaces William Yau who will move to Borealis as Senior Vice President for Commercial Excelience.

Appointed to drive forward the growth of Borouge together with Abdulaziz Alhajri, Chief Executive Officer of Abu Dhabi Polymers – Borouge, Wim Roels comes with extensive experience in production, innovation and business management. Prior to joining Borouge, he was Senior Vice President of Business Unit Film and Fibre at Borealis. His previous managerial roles include Vice President of the Moulding Business Unit, Vice President of Innovation and Technology and leading the production operations of Borealis in Belgium. Wim Roels is a citizen of Belgium and started his career in the polyurethane and phenolic foams business in 1984. Subsequently, in 1989, he joined Borealis as Technical Service and Development Engineer for moulding applications, and later, as Research Centre Manager in Porvoo, Finland.

Temasek Holdings Considers Sale of Stake in PT Chandra Asri Petrochemical

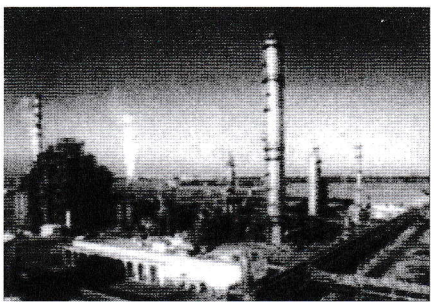


Temasek Holdings - Singapore's state-owned investment company – is considering selling the 22.9 per cent stake it holds in Indonesia's PT Chandra Asri Petrochemical. Also, Thailand's Siam Cement Plc and PTT Chemical Plc are reportedly among companies, who have expressed interest in buying Temasek's holding. The stake is valued at 2.2 trillion rupiah ($ 307 million) based on Chandra Asri's market capitalization.

The merger of PT Chandra Asri and PT Tri Polyta Indonesia Tbk has led to the formation of Chandra Asri Petrochemical. Temasek owns shares through its Apleton Investment Ltd unit and holds a minority stake in Chandra Asri. Jakarta-based PT Barito Pacific owns 71.9 per cent of the stock.

Formosa's 540,000-Bpd Refinery Ready for Restart

Subject to government approval, Taiwan's Formosa Petrochemical Corp is ready to start up its 540,000-Barrels Per Day (bpd) refinery in stages. The refinery was completely shut down following a fire at a secondary unit few months back. Whether Asia's fifth largest refinery will be able to fully restore its diesel and gasoline exports, estimated at 800,000 tonne per month, remains unclear.



Formosa operates three Crude Distillation Units (CDUs) of equal capacity of 180,000 bpd, but had shut the plant for safety reasons after a fire from a propylene-recovery unit damaged some of its surrounding infrastructure, including power cables fibres. It had declared force majeure on diesel and gasoline supplies and had to store two million barrels of Oman crude in South Korea, giving the market a boost.

Borealis's New Medical Moulding Prescription

Borealis and Borouge, leading providers of plastic solutions have launched a High-Density Polyethylene (HDPE) material designed to improve productivity for converters in the healthcare market, without compromising the performance of medical devices or pharmaceutical and diagnostic packaging.

With a Melt Flow Rate (MFR) of 31, Bormed HE9601-PH is claimed to improve flow rates by up to 2.5 times as compared with alternatives. This should enable faster injection moulding of products ranging from two-part syringe plungers to caps and closures. The higher flow allows for operation at lower pressures and temperatures, thereby reducing energy requirements as well as mould maintenance, and also facilitating moulding of components with complex design parameters and /or longer flow lengths.

Lyondellbasell Seeks Additional PP from South Korean JV

LyondellBasell is seeking additional Polypropylene (PP) allocation from its South Korean Joint venture (JV) Polymirae. Al-Waha Petrochemicals, LyondellBasell's

JV with Sahara Petrochemicals in Saudi Arabia, was forced to shut its 450,000 Tonne per Annum (tpa) PP plant from July 16 to August 2. The Shutdown was triggered by a technical problem at its Recycle Effluent Compressor. Polymirae is a JV between LyondellBasell and South Korea's Daelim. It has four PP Lines with a total production capacity of 700,000 tpa at Yeosu.

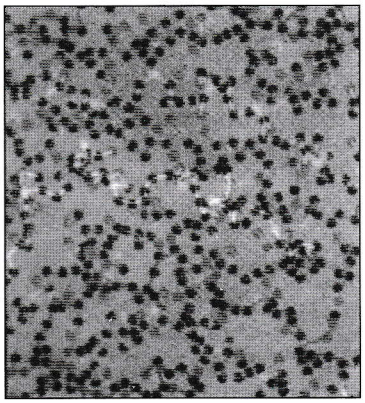
MIDDLE EAST

Middle East's Largest Polyester Project to Commence Production in 2012

The foundation stone has been laid for a 420,000 tonnes per annum polyester project – Middle East's largest, in Egypt's Economic Zone, northwest of Gulf of Suez. This will comprise the last project in the first phase of national plan for petrochemicals carried out by the Egyptian Holding Company for Petrochemicals. This Indo-Egyptian joint venture will require an investment outlay of $ 160 million.

The project is estimated to commence production at the end of 2012. India's Dhunseri Petrochem and Tea Ltd. will hold 70 per cent stake, while Egyptian Holding Company for Petrochemicals will hold 23 per cent stake and Engineering for the Petroleum and Process Industries (ENNPI) will hold the balance 7 per cent.

Petro Rabigh May Resume Production in Time for Peak Polymer Demand



Petro Rabigh has resumed complete production at its petrochemical complex, just in time for the peak polymer demand season in the Middle East. As per Saudi Gazette, the company recently restarted its High Olefins Fluid Catalytic Cracker (HOFCC) in July after a prolonged maintenance.

The whole petrochemical complex was taken off line for maintenance in April. Polymer demand in the Middle East is expected to improve in September at the end of Ramadan. The Rabigh complex includes a 400,000-bpd refinery, a 700,000-Tonne Per Annum (tpa) Polypropylene (PP) plant; a 600,000-tpa Linear Low-Density Polythelene (LLDPE) unit; a 300,000-tpa Monoethylene Glycol (MEG) plant.

Tasweeq Offers Naphtha from Pearl Gas-to-Liquids Plant

Qatar International Petroleum Marketing Co. (Tasweeq) is reported to have offered 360,000 tonne of naphtha from the Pearl gas-to-liquids plant. The naphtha will be loaded in 12 monthly shipments of 25,000 or 30,000 tonnes to September 2012 from the Port of Ras Laffan.

BASF to Build World-Scale Production Site for Customer Specific Antioxidant Blends

BASF will significantly expand its presence in the Middle East region by building a state-of-the-art plant for customer specific antioxidant blends (CSB) in Bahrain. CSBs are key additives for the production of polymers for the plastics industry, especially for the Middle East region. Construction of the new facility has started in September 2011. It will become one of the world's largest CSB plants with an annual capacity of about 16,000 metric tons. The new plant will be operational by end of 2012.

AMERICAS

M & G Group to Build PET and PTA Plant at Corpus Christi, Texas

M&G Group, producer of Polyethylene Terephthalate (PET) for packaging applications, has selected Corpus Christi, Texas, as the location for its 1 million Tonne Per Annum (TPA) PET plant and accompanying 1.2 million TPA Purified Terephthalic Acid (PTA) plant. The new PET single line plant will employ the same technology as M&G's single reactor Suape (Brazil) PET plant, including M&G's revolutionary EasyUP™ SSP technology.

The estimated construction time for both plants is 30 months. The engineering, project management,

sourcing and construction management will be performed by Chemtex Global SA, a subsidiary company of the M&G group. The part infrastructure allows marine access to the facility's raw materials.

Boeing Unveils First 787 Dreamliner that will Enter Service

The first Boeing 787 Dreamliner that will enter into service has been unveiled. The aircraft bears the livery of launch customer ANA.

Japanese airliner ANA's first 787 features a short-haul international interior design with business- and economy-class cabins.

Around 50% of the primary structure of the B787 Dreamliner (including the fuselage and wing) is made of composite materials.

Braskem Buys Dow's PP Business

Brazilian plastics giant Braskem has acquired Dow Chemical's Polypropylene (PP) business for $ 323 million. This deal makes Sao Paulo-based Braskem the largest PP producer in North America, and includes two plants in the US and two in Germany, with total annual capacity of 2.3 billion pounds. The sales price was 6.7 times annual earnings before interest, taxes, debt and amortization for the business. The confirmed sales do not include Dow's PP catalysts unit.

Dow produces PP at its complexes in Freeport and Seadrift, Texas. According to Braskem, the two US plants will increase their PP capacity by 50 per cent in the region to an annual production capacity of 3.1 billion pound. "The acquisition of Dow's assets consolidates our leadership in PP production in the US, the largest thermoplastic resins market. It also enhances our current position in Europe, which is an important market for our biopolymers strategy," said Carlos Fadigas, CEO, Braskem. The deal is scheduled to close by the third quarter, with pending regulatory approvals. Last year, Braskem had acquired the PP business of Sunoco – including plants in Pennsylvania, West Virginia and Texas – for $ 350 million.

EUROPE

VinylPlus Programme

The European PVC industry has announced an ambitious new set of targets for sustainable development by 2020 and called for the support of policy makers in stimulating recycling in Europe. The VinylPlus programme is built around five commitments aimed at achieving a quantum leap in recycling rates of PVC and the development of innovative recycling technologies; addressing concerns about organochlorine emission; ensuring the sustainable use of additives; enhancing energy efficiency and the use of renewable energy and raw materials in PVC production and; promoting sustainability throughout the whole PVC value chain.

The new initiative builds on the success of the Vinyl 2010 ten year voluntary commitment to enhance the sustainable production and use of PVC. Vinyl 2010 is widely regarded as a leading example of industry self-regulation working in practice and delivering concrete results. Among its most significant achievements was the establishment of an infrastructure for the annual collection and recycling of over 250,000 tonnes of PVC, which prior to 2000 had been dismissed by many as an unrecyclable material destined for landfill.

VinylPlus has been developed with the input and guidance of The Natural Step (TNS), an international NGO at the forefront of research and dialogue on sustainable development.

SOCAR's $ 5 Billion Refinery to Reduce Turkey's Dependence on Oil Imports

On completion of the Petkim Aliaga oil refinery field, Turkey's dependence on oil & oil products will be reduced by billions of dollars per year. Construction of the $ 5-billion Petkim Aliaga refinery is expected to be completed by 2015, with total oil extraction capacity at about 10 million Tonne Per Annum (tpa). Production will comprise naphtha, fuels for jetliners, low-sulphur diesel fuel, liquid petroleum gas and other petrochemicals, of which Turkey is presently a net importer.

Turkey's dependence on foreign oil and gas is the most significant reason for the country's consistent foreign trade deficit.

Rochling Automotive's New Process Saves Weight and Cost

Rochling Automotive has launched cowl grille and engine cover bulb seals in a one-shot process. The two-component process can help solve quality problems typical for assembled parts. It chemically bonds on EPDM-bulb seal with a PP carrier, eliminating any risk of the parts becoming detached.

The seals can be manufactured in lengths up to 1.5 m with constant wall thickness and complex three-dimensional shapes meeting most design requirements. The wall thickness can be varied to suit different sealing or force requirements along the length of the seal. The seal compensates for vehicle tolerances up to 10 mn in line with closing pressure. It can be made longer, shorter or equal to length of the carrier. It can comprise T- or V- shaped junctions.

After moulding the hard component of cowl grille, a slider opens to allow the seal cavity to be filled with elastomer. A projectile forces out most of the liquid elastomer, leaving an accurate elastomer wall behind. The ejected material is reused, thus minimizing waste.

Aseptic Blow Fill Bottle-Filling Technology by GEA Procomac

GEA Procomac has developed a new Aseptic Blow Fill (ABF) technology. This new concept has the potential to significantly reduce the total cost of ownership for aseptic bottle-filling technology.

The ABF is the world's first rotary aseptic blow moulding machine with an integrated aseptic filler and capper. Its principle is to sterilize the perform, not the formed bottle, with hydrogen peroxide at the exit from the oven, then blow the performance with sterile air in a sterile environment, maintaining this sterility during the filling and capping process. This minimizes use of chemicals, requires no bottle rinsing, enables a simpler & smaller layout and reduces energy consumption.

A key design feature is blowing of the preforms 'upside down'. This enables all non-cleanable components to be placed outside the sterile zone – electrical components are positioned above the sterile zone; mechanical components and other components that require lubrication are placed below the sterile zone. All surfaces in the sterile zone are accessible and are easy to clean.

The process is designed for maximum efficiency and economy. The system is more compact than traditional technology and requires fewer operators.

La Seda Sells Portuguese Facility in Restructuring

European PET group La Seda De Barcelona (LSB) has continued its restructuring with sales of the Artenius Portugal Industria de Polimeros PET resin plant in Portalegre, Portugal. The plant has a production capacity of 70,000 tonne per annum.

The Portuguese facility, which has not been operational since the end of 2010, will be acquired by the company Control PET, owned by Portuguese investment firm ImatosGil Group (IMG) and its partner bank Banco Espirito Santo. The acquisition deal is valued at € 5.6 million with payment by the purchaser to be made during 2011-2015. But, the final sales price may rise according to the company's productivity during that time. The Spanish group explained that it was disposing off the Portuguese plant because it did not fit the future technology, location or size criteria set by LBS in its strategic plan.

3M Expands Polish Auto Parts Production

3M, a global technology group has established two new plants in Wroclaw, Poland, to supply components for the aerospace and automotive industries.

The US-based group, which now has six production units operating in the Polish city, aims to concentrate its manufacturing across a wide product range in Poland to serve its Central and Eastern European markets. 3M's new space and aviation plant, part of the group's aerospace and aircraft maintenance division, manufactures a range of films, structural

bonding adhesives and thermoset surface protective film. Divisional clients of the company include Airbus, Bell and Boeing.

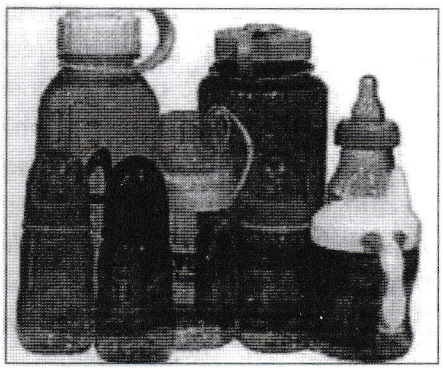
The group's second new facility in Wroclaw's special economic zone 'Invest-Park' will focus on producing components for ceramic catalytic filters for diesel cars, trucks and buses. The Wroclaw unit will use a patented 3M technology to make fibre-based material in a dry process. The manufacture must meet the strict requirements of EU countries for catalytic converters and diesel filters. The two plants together are set to create approximately 100 new jobs in the Wroclaw area.

TI Automotive Inks Contracts with Daimler and Renault

TI Automotive has announced its contract for supply of fuel tanks to Daimler's Smart car platform and Renault's Twingo platform. However, the financial terms of the deal have not been disclosed.

The US-based supplier will produce nearly 350,000 tanks for the automakers annually from its German plants in Ettingen and Rastatt. The contract with Renault brings TI's total annual production for the French automaker to 800,000 fuel tanks. TI's German plants also manufacture plastic fuel tanks for Volkswagen Group's European models. TI has secured 70 fluid systems contracts through the first half of 2011. TI had recruited Deutsche Bank and Lazard to explore strategic alternatives for the company, including a potential sales or initial public offering.

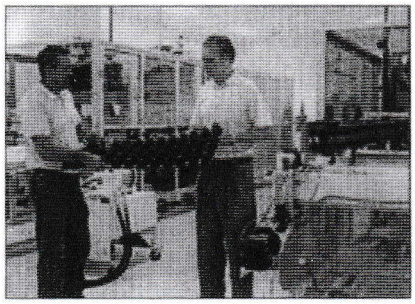
EU-Wide Ban on Sales of BPA-Based Baby Bottle



A European Union-wide ban on the sales of baby bottles containing additive Bisphenol A (BPA) has been enforced. It follows a European Union (EU) ban from March 1, 2011, on manufacturing baby bottles using polycarbonate plastics that incorporate BPA.

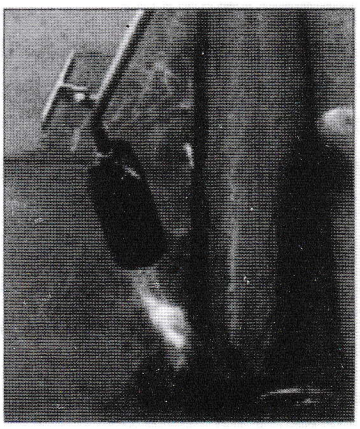
The EU has acted after inconclusive advice from the European Food Safety Authority (EFSA) over the potential of BPA to harm infants, should the chemical leach into infant formula. EFSA has informed that more studies are needed to demonstrate whether using BPA in baby bottles was safe.

CPF Enhances Thin-Guage Thermoforming Capability



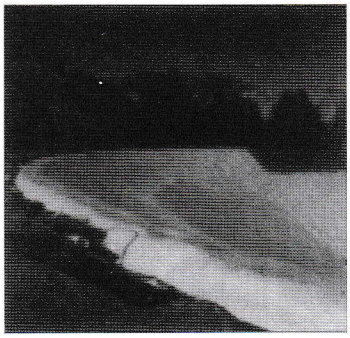
Custom Plastic Forming Inc (CPF) is all set to expand its thin-guage thermoforming production capacity with the opening of a 6,000-sq ft manufacturing facility in Salisbury by August 2011. "This is a further expansion of our in-line forming side," said Elaine Martin, Vice president, CPF. The new setup will be located a few miles from the firm's main facility in Salisbury, and will include three production lines. It will have Sencorp 2500 thermoformer machines. The setup will provide a temperature-controlled, clean-room-type environment for customers that need more control over the process.

TPOs from Lyondellbasell-Proven Performance in Waterproofing Applications

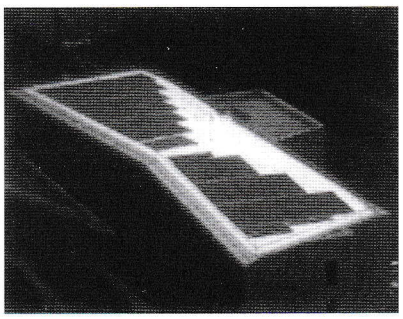


Since their introduction into Europe and the United States, thermoplastic polyolefins (TPO) from Lyondellbasell have taken part in many customer success stories. Unlike conventional TPOs that are merely mechanical

blends of elastomers in polypropylene matrix, LyondellBesell's TPOs are alloys of rubber and polypropylene produced simultaneously in the polymerization reactor.



These alloys offer optimum processing and end-use properties, making them a popular choice for waterproofing applications.



Customers select LyondellBesell's Adflex X101H and Adflex Z101H grades for bitumen modification in roofing and bridge insulation. Adflex resins improve the cold bending properties of bitumen even after thermal and UV ageing.

LyondellBesell's Hifax resins such as Hifax CA10A, Hifax CA212A and Hifax CA60A have been specified by customers for many years for the extrusion of roofing and waterproofing membranes. Hifax resins are naturally flexible and do not contain plasticizers.

In geomembrane applications, customers select Hifax resins for the flexibility, high puncture resistance, low coefficient of thermal expansion and excellent weldability.

Hifax resins are also used as base polymers for roofing membrane applications which require modification using mineral flame retardants and fabric-based reinforcement. TPO-based roofing membranes are recognized in the industry for cost efficiency ease of installation, durability and long service life.

Bayer Develops Concept for Green Shoe Using TPU Based on Renewable Resources

Bayer MaterialScience has developed a unique concept for a "green shoe" that uses a whole host of sustainable materials and technologies. These include polyurethane (PU) raw materials based on natural resources, products for solvent-free coatings and adhesives, and a poly-carbonate blend and thermo-plastic polyurethane (TPU) based on renewable resources. Up to 90% of all components in the "Ecotrekker" concept shoe can be given eco-compatible properties by using the company's products.

This integrated concept from Bayer MaterialScience strongly reinforces the company's commitment to sustainable solutions and once again demonstrates its expertise in developing innovative technologies and materials. Footwear manufacturers, end consumers and, not the least, the environment can all benefit equally from the concept.

AUSTRALIA

Ban Issued on Plastic Bags in Australia's Northern Territory

Akin to the approach adopted by South Australia, the northern territory legislation will prohibit the supply by retailers of plastic bags with handles that are made of polyethylene polymer of thickness less than 35 micron.

The authorities have asked the retailers to check with their supplier if they are unsure about the composition or thickness of the bags they supply. The NT Legislative Assembly passed this legislation in February 2011. The phase-out period commenced on May 1, 2011, and the ban will commence on September 1, 2011.

In the territory, similar to South Australia, the ban will not extend to reusable 'Green bags' (heavy polypropylene plastic bags designed to be reused over 100 times), recycled bags that people carry along, heavier retail (or boutique) bags, typically used by clothing and department stores, biodegradable bags that state they meet the Australian Standard AS 4736-2006 and barrier bags, the type dispensed from a roll, typically for sales of loose items like fruits and vegetables.

प्रभात खबर बंगाल

कोलकाता, गुरुवार, २६ अप्रैल, २०१२

बनेगा प्लास्टिक नॉलेज सेंटर

मिलेगा रोजगार

उद्योग में रिसाइक्लिंग के उपयोगी होने का दावा

■ संवाददाता
कोलकाता

प्लास्टिक उत्पादन करने वाली कंपनियों के पास कुशल श्रमिकों की कमी है. इसे देखते हुए राज्य में पहला प्लास्टिक नॉलेज सेंटर खोला जा रहा है. यह देश का पहला ऐसा सेंटर होगा, जहां आगे आनेवाले युवाओं को प्लास्टिक उत्पादन से जुड़ी बारीकियां सिखायी जायेंगी. यह जानकारी बुधवार को इंडियन प्लास्टिक फेडरेशन के अध्यक्ष राजेश मोहता ने दी. वह महानगर में फेडरेशन की ओर से आयोजित एक संवाददाता सम्मेलन में बोल रहे थे.

उन्होंने बताया कि राज्य सरकार से उन्हें आधी कीमत पर भूमि मिली है. इसका निर्माण कार्य शुरू हो गया है. श्री मोहता ने बताया कि इसके निर्माण में 25 करोड़ की लागत आयेगी. इस नॉलेज सेंटर के खुलने से प्रति साल प्लास्टिक कंपनियों को तीन हजार कुशल श्रमिक मिलेंगा. इससे राज्य में बेरोजगारी कम होने की उम्मीद है. श्री मोहता के मुताबिक ज्यादातर लोगों को लगता है कि प्लास्टिक से केवल प्रदूषण फैलता है. इस धारणा को बदलने पर जोर देते हुए उन्होंने कहा कि अगर प्लास्टिक की रिसाइक्लिंग की जाये, तो यह हमारे लिए काफी उपयोगी साबित होगी. रोड निर्माण के क्षेत्र में भी प्लास्टिक उपयोगी हो सकते हैं. प्लास्टिक के इन गुणों से लोगों को अवगत कराने के लिए इंडियन प्लास्टिक फेडरेशन की ओर से महानगर की साइंस सिटी में पांच अक्तूबर से अंतरराष्ट्रीय प्लास्टिक प्रदर्शनी लगायी जायेगी. चार दिन चलनेवाली इस प्रदर्शनी में भारत के साथ-साथ बांग्लादेश, भूटान, नेपाल, थाइलैंड के स्टॉल लगेंगे. इससे आगंतुकों को प्लास्टिक व इसके उत्पादों के बारे में कई उपयोगी जानकारी मिलेगी.

क्या है प्लास्टिक नॉलेज सेंटर

इंडियन प्लास्टिक फेडरेशन की ओर से खुलने वाला यह पहला ऐसा नॉलेज सेंटर है, जहां छात्र-छात्राओं को प्लास्टिक उत्पादन के क्षेत्र में उपयोग आनेवाली सभी तकनीकी गुण सिखाये जायेंगे. इसे हावड़ा जिले के सांकराइल स्थित पॉली पार्क में 1.02 एकड़ जमीन पर बनायी जा रही है. इसका पूरा काम आइपीएफ नॉलेज सेंटर रखा गया है.

जल्द ही शुरू की जायेंगी कक्षाएं

श्री मोहता ने बताया कि नॉलेज सेंटर का काम चल रहा है. इसे पूरा तैयार होने में कुछ समय लगेगा. इसलिए मॉनसून के बाद महानगर के रॉयड स्ट्रीट स्थित इंडियन प्लास्टिक फेडरेशन के कार्यालय में ही बच्चों को पढ़ाया जायेगा. इसमें दाखिले के लिए माध्यमिक व उच्च माध्यमिक पास होना आवश्यक है.

एकदिन

२६ एप्रिल, २०१२ ● कलकाता

साँकराइले नलेज सेन्टार

निजस्व प्रतिवेदन: इन्डियान प्लास्टिक फेडारेशन साँकराइले एक एकरेर बेशि जमिते नलेज सेन्टार गड़े तुलछे। सेखाने पलिमारेर नाना पण्यसामग्री तैरिर विभिन्न पर्यायेर प्रशिक्षणेर व्यवस्था करा हबे। गवेषणागार, ग्रन्थागार ओ छात्रावासेर व्यवस्थाओ थाकछे ओई नलेज सेन्टारे। न्याशनाल स्किल डेभेलपमेन्ट काउन्सिल अनुमोदित पाठक्रमे प्रशिक्षण देओया हबे। एई प्रकल्पे खरच हबे प्राय २५ कोटि टाका। बुधवार एक साँवादिक सम्मेलने ए कथा जानान अमर शेठ। एदिके ५-८ अक्टोबर सायेन्स सिटिते प्लास्टिक ओ पलिमार शिल्पप्रदर्शनीर आयोजन करेछे इन्डियान प्लास्टिक फेडारेशन। प्रदर्शनी कमिटिर चेयारम्यान अमर शेठ जानियेछेन, उद्बोधन करार जन्य मुख्यमन्त्रीके अनुरोध करा हयेछे। ताइओयान एई प्रदर्शनीते बिशेष भावे अंश निछे। ताइओयान, चिन-सह दक्षिण-पूर्व एशियार बेश किछु देश एवं अन्यान्य राज्येर प्रतिनिधि मिले प्राय ४०० संस्था एई प्रर्दशनीते अंश नेबे बले आशा आयोजकदेर।

जनसत्ता

जनसत्ता, कोलकाता, 26 अप्रैल 2012

साइंस सिटी में होगी प्लास्टिक की अंतरराष्ट्रीय प्रदर्शनी

कोलकाता, 25 अप्रैल (जनसत्ता)। इंडियन प्लास्टिक फेडरेशन (आईपीएफ) की ओर से महानगर कोलकाता के साइंस सिटी में पांच से आठ अक्तूबर 2012 तक प्लास्टिक उद्योगों से संबंधित एक अंतरराष्ट्रीय प्रदर्शनी 'इंडप्लस-2012' आयोजित होगी। इस बारे में बुधवार को एक प्रेस कांफ्रेंस में प्रदर्शनी समिति के चेयरमैन अमर सेठ व राजेश मोहता ने पत्रकारों को बताया कि इस प्रदर्शनी में सात सौ से ज्यादा प्रतिभागी हिस्सा लेंगे। इसके अलावा बांग्लादेश, भूटान, नेपाल, थाइलैंड, चीन, ताइवान और वियतनाम जैसे पड़ोसी देशों से भी लोग यहां आएंगे। सेठ ने बताया कि कोलकाता से सटे सांकराइल में 50 एकड़ जमीन पर एक पॉलीपार्क का निर्माण जारी है, जहां एक आईपीएफ नॉलेज सेंटर खोला जाएगा। इस नॉलेज सेंटर में अनुसूचित जाति, आदिवासी व गरीब तबकों के युवकों को प्लास्टिक उद्योग का प्रशिक्षण दिया जाएगा। इस कार्यक्रम में नेशनल स्कील डेवलपमेंट काउंसिल सहयोगी है। उन्होंने बताया कि ट्रेनिंग लेकर युवक रोजगार पा सकेंगे।

The Bengal Post

Kolkata Thursday April 26, 2012
www.thebengalpost.com

IPF keen to have 2 more poly parks in Bengal

Our Correspondent

Kolkata: Indian Plastics Federation, on Wednesday, said it is keen to have two additional polyparks in the state with a total area requirement of 250 acres.

The federation as the nodal agency has asked for land from West Bengal Small Industries Development Corporation (WBSIDCL). It has also approached Haldia Development Authority (HDA) for land in Haldia as well.

"We are trying to have another poly park for an area of 150 acres and have applied to WBSIDCL one year back. They have land available with them and we are negotiating with them. We have also asked HDA for about 100 acres of land in Haldia for a third poly park," Amar Seth, chairman, exhibition organizing committee, IPF, said.

At Sankrail, there is an existing poly park with an area of 50 acres and can cater to 36 units. A knowledge centre will also come up within the same place and it is likely to completely operational in the next one-and-a-half-years. "After monsoon, we will start arranging for the funds," he said.

The total plastic consumption in the country is 50 lakh tonne per annum with an estimated annual growth rate of 15 per cent. "Out of 50 lakh tonne consumption, 20 lakh tonne is met through imports. Consumption in eastern region is 7 lakh tonne with 4.65 lakh tonne is processed in West Bengal and another 1.6 lakh tonne is imported," he said.

The per capita consumption in the eastern region is 3.5 kg against the national average of 8 kg.

The industry employs around four lakh skilled and unskilled workers in the country.

राजस्थान पत्रिका
कोलकाता . गुरुवार
26.04.2012

नॉलेज सेंटर बनाएगा आईपीएफ

- प्रति वर्ष तीन हजार विद्यार्थियों को करेगा प्रशिक्षित
- उद्योग का वृद्धि दर 15 फीसदी

कोलकाता

पश्चिम बंगाल में प्लास्टिक उद्योग 15 फीसदी की दर से बढ़ोतरी कर रहा है। इस प्लास्टिक उद्योग को प्रशिक्षित एवं दक्ष कर्मचारी देने के लिए इंडियन प्लास्टिक फेडरेशन (आईपीएफ) नॉलेज सेंटर बनाएगा। इस नॉलेज सेंटर में प्रति वर्ष तीन हजार विद्यार्थियों को प्रशिक्षित किया जाएगा। इस योजना के तहत आईपीएफ का नेशनल स्किल डेवलपमेंट काउंसिल के साथ समझौता हुआ है। काउंसिल की ओर से प्रशिक्षित विद्यार्थियों को सर्टिफिकेट जारी किए जाएंगे।

आईपीएफ के अध्यक्ष राजेश मोहता ने बताया कि सांकराइल स्थित पॉलीपार्क में ही नॉलेज सेंटर बनाया जाएगा। मानसून के बाद इसकी इमारत का निर्माण कार्य शुरू किया जाएगा लेकिन इससे पहले ही विद्यार्थियों को प्रशिक्षित करने का काम शुरू हो जाएगा।

संवाददाता सम्मेलन को संबोधित करते हुए इंडियन प्लास्टिक फेडरेशन के चेयरमैन अमर सेठ, अध्यक्ष राजेश मोहता, ताइवान के सी येन हांग, प्रदीप नायर व एच. के. गोयनका। *पत्रिका*

सेंटर में विद्यार्थियों के लिए पॉलीमर, टेस्टिंग लैबोरेटरी और प्लास्टिक रि-प्रोसेसिंग के डेमो प्लांट के साथ ही होस्टल और लाइब्रेरी की सुविधाएं भी होंगी। डब्ल्यूबीआईडीसी के साथ हुए समझौते के तहत इस योजना में अनुसूचित जाति, जनजाति और गरीब तबके के युवाओं को प्रशिक्षित करने पर विशेष जोर दिया जाएगा। इस पर लगभग 20 करोड़ रुपए खर्च आएंगे। उन्होंने बताया कि बंगाल में प्रति वर्ष 50 लाख टन प्लास्टिक की खपत होती है और प्लास्टिक के 450 किलो टन सामान का निर्माण किया जाता है। जबकि प्लास्टिक का 165 किलो टन सामान आयात किया जाता है। इस क्षेत्र में प्रचुर संभावनाएं है। इसके साथ ही उन्होंने बताया कि राज्य की कई सड़कों को बनाने में प्लास्टिक का भी इस्तेमाल किया जा रहा है।

पांच अक्टूबर से सेमिनार

आईपीएफ के एक्जीबिशन ऑर्गनाइजिंग कमेटी के चेयरमैन अमर सेठ ने बताया कि प्लास्टिक उद्योग को बढ़ावा देने के लिए आईपीएफ 'इंडप्लस' के नाम से एक प्रदर्शनी आयोजित करेगी। इसमें अपने देश के साथ साथ बांग्लादेश, भूटान, नेपाल, थाइलैंड, ताईवान, चीन और वियतनाम की कई कम्पनियां हिस्सा लेगी। यह प्रदर्शनी पांच से आठ अक्टूबर तक साइंस सिटी में आयोजित की जाएगी। उन्होंने बताया कि पूर्वी क्षेत्र में प्लास्टिक का प्रति वर्ग किलोमीटर खपत 3.5 किलोग्राम है जबकि देश में 8 किलो व विश्व में 30 किलोग्राम है।

इस क्षेत्र में संभावनाओं की कमी नहीं है। इस प्रदर्शनी में स्कूली छात्रों को भी बुलाया जाएगा।

इस कार्यक्रम में ताइवान एक्सटर्नल ट्रेड डेलवपमेंट काउंसिल के प्रभारी सी येन हांग सहित कई प्रमुख लोग उपस्थित थे।

(कार्यालय संवाददाता)

MONTHLY CIRCULAR OF THE FEDERATION

CIRCULAR NO. 58/2012 :

Sub: Membership of the Federation

The Federation has received the following application for membership of the Federation :

1. a)	Name & Address of the Applicant Firm	:	**M/S. MUKAND POLY PRODUCTS** Royal Arcade, Part-II, 3rd Floor B. Barua Road, Ulubari Guwahati - 781 007
b)	Class of membership	:	**Life Manufacturer Member**
c)	Proposed by	:	M/s. Tie Creations Pvt. Ltd.
d)	Seconded by	:	M/s. Rajda Sales (Cal) Pvt. Ltd.
e)	Name of representatives	:	1) Mr. Rajesh Mohta 2) Mr. Rishi Gupta 3) Varun Mohta
f)	Items of manufacture	:	Manufacturer of PLB, HDPE Ducts & Pipes

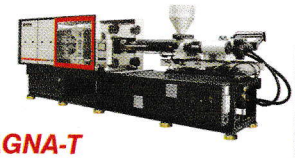
(Circulated in terms of Article 15 of the Articles of Association of the Federation)

CIRCULAR NO. 59/2012 :

Sub: Consumer Price Index Number for Industrial Workers for Kolkata for the months of July 2011 to February 2012

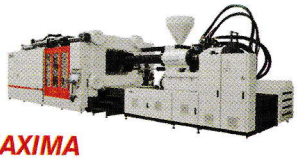
Month	Consumer Price Index	
	Base (1982 = 100)	Base (1960 = 100)
July, 2011	952	4512
August, 2011	983	4659
September, 2011	988	4683
October, 2011	978	4636
November, 2011	968	4588
December, 2011	947	4489
January, 2012	942	4465
February	952	4512

Ferromatik Milacron India constantly strives to offer its Plastics Injection Moulding Machine customers Innovative Solutions to keep them ahead in this competitive arena. Product development is a continuous process to assist customers in reducing their overall per piece cost of product & Energy Consumption and thereby increasing their productivity & Reliability.



MAGNA-T
Toggle Injection Moulding Machine 50 to 500 ton

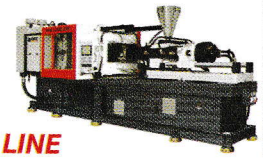
OMEGA
Hydraulic Injection Moulding Machine 80 to 910 Ton



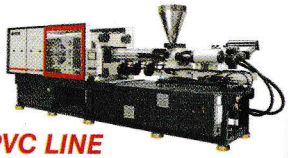
MAXIMA
Two Platen Injection Moulding Machine 500 to 3000 Ton

ELEKTRON
All Electric Machine 50 to 350 Ton

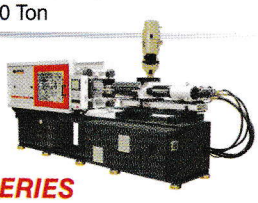
HYDRON
Hydraulic Injection Moulding Machine 100 to 450 Ton



PVC LINE
Hydraulic Injection Moulding Machine 100 to 910 Ton



CPVC LINE
Toggle Injection Moulding Machine 110 to 500 Ton



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