

A Podcast Guided Tour Shanghai Petrochemical Science & Technology Museum

Leave the traditional guided tours behind and strike out at your own pace with an audio guide. You are about to embark on a tour of the petrochemical world – the petrochemicals that make the world go round. This bilingual podcast is presented by Shanghai Daily and supervised by the Shanghai Science and Technology Committee.

Petroleum, also known as “black gold” and the “blood of industry,” is the most important nonrenewable energy source in the modern world today. And it’s especially precious because it’s nonrenewable. We have what nature gave us – no more.

This black gold is the feedstock for the petrochemical industry. Refineries turn petroleum into gasoline and fuels for our cars, motorbikes, aircraft, generators, industrial engines and many other drivers of the modern world.

And petroleum is used to make the plastics that we see everywhere around us and that we often take for granted. From petroleum comes nylon and synthetic fabrics – nylon for ladies stockings and sophisticated synthetics and blends that make some of our most durable fabrics – and beautiful

clothing today. Space age plastics come from petroleum. Petrochemicals play a major role in every important field – from artwork to aerodynamics.

Oil is China' s No. 2 energy source. Oil is vital to China; coal -- another nonrenewable resource from the earth – is China' s No. 1 energy supply.

China is the world' s No. 5 oil producer and because of China' s rapidly growing economy, almost all the oil it produces is for domestic consumption. In 2006 China produced 3.68 million barrels of crude oil daily.

China is the world' s No. 2 oil consumer after the United States.

China is the world' s No. 3 importer of oil, after the United States and Japan.

China has vast oil reserves, with oil fields in the far west, and other important fields in the South China Sea.

China' s oil reserves rank No. 10 in the world. (End of 2006)

Where does petroleum come from? Where does it go? How do we use in our daily lives? And how does it make our world go round?

Let' s take a walk around the museum to find out.

First, about the museum:

This museum opened in January 2006 in the former exhibition hall of SINOPEC Shanghai Petrochemical Co. Ltd in suburban Jinshan District. SINOPEC is the China Petroleum & Chemical Corp – a vast energy and chemical company engaged in oil and gas exploration, oil refining, distribution of oil and gas and production of petrochemicals and other products.

The museum covers about 1,500 square meters and consists of four halls. Two of them popularize science with multi-media presentations, which you can enjoy.

Walk straight ahead through the short passage to the first hall. Chinese characters appear directly in front of you. They read: "*The Rising Sun in Jinshan*" and it means that the petrochemical company is growing and prospering under the sun. They were inscribed by Chen Jinhua who was once the general manager of SINOPEC, parent company of Shanghai Petrochemical Co. He is a former vice chairman of the CPPCC, the Chinese People' s Political Consultative Conference – a body that advises the National People' s Congress.

Now you are in the first hall. A model of the whole layout of Shanghai Petrochemical Co is before you. The ratio is 1: 1,000. In front of the model, a

touch-screen provides an audio and video description of the company in Chinese or English. Click for a panorama of the company that integrates oil refining with the chemical industry.

On the left side of the hall are photographs that show the company' s development since it was founded in 1972. Shanghai Petrochemical Co was built on land that was once the sea sands. What you see here now truly grew from nothing.

Now turn right into the second hall. This is where we begin the petrochemical journey and learn about oil. On the left is a large colorful "oil tree." Many products derived from oil refining are shown on the tree' s branches and leaves. You can see synthetic resin, fibers and rubber, ammonia, fertilizer, fuel, lubricants, and many other products.

China was one of the first countries to discover and use of oil.

It is generally acknowledged that the earliest use of oil by Chinese people dated back to the Western Han Dynasty (206 BC-24 AD) and the Western Jin Dynasty (265-316 AD). Ancient Chinese used oil for lighting, lubricating, for medicine, military purposes and for ink-making.

Shen Kuo, a scientist in the Song Dynasty (960-1279) in the 11th century,

first used oil as an industrial chemical and predicted oil's immense potential in the future

Walk straight ahead to a model of an oil tank with a LCD screen on it. A

3D animated cartoon is playing. An oil baby, in the shape of a droplet of oil, will tell you the basics about crude oil. You will learn how oil is formed, how men explore for black gold and drill for it, exploit the resource, produce and refine it. You will also learn about natural gas, a valuable clean source of energy that is found near oil deposits.

Oil was formed when the Earth was young. It was formed when inorganic carbon and water deep in the earth turned into hydrocarbon under great pressure and high temperature. It lies in the cracks of rocks, usually in the form of liquid. Oil can also be extracted from rocks themselves, from oil shale, and from some sand.

Now, walk straight ahead. You can watch a 10-minute holographic

projection of the oil refinery process. Two characters, the Oil Elf and Engineer Zhang, will guide you through Shanghai Petrochemical Co. You will see how the materials for our daily necessities come into being through refining and processing petroleum. The manufacturing of synthetic fibers and plastics is described in a clear and lively way.

Now let's enjoy it and pick up some scientific information.

When you have finished:

Walk to your right and you'll get a basic idea of plastics production.

In this area, three major processes for plastics production are presented. Nowadays, plastics are widely used in industry, agriculture, the military, medicine, communications and food packaging. You can see a medical injection syringe, lunchbox, automobile tail light and gasoline can -- all made of plastics.

The key to making plastics is ethylene polymerization. Ethylene is one of the key materials in plastic and it is created through polyreaction. Press the green button on the device here: you will see the simulated polyreaction process of an enlarged ethylene molecule.

Next on your left, step into a virtual 3D space to see the four typical reactions in the organic chemical industry. It is based on carbon and its compounds. Just touch the screen to see these four reactions that we cannot see with the naked eye. They are complicated but fascinating and important to our daily lives.

These reactions ultimately yield plastics, rubber, pesticides, chemical reagents, catalyst, perfume compound, materials for medicines, dye, organic pigment. Organic chemicals are used everywhere – in industry, agriculture, medicine, transport, environmental protection, national defense, life sciences, and many other fields.

But the petroleum that gives us chemicals and plastics for our daily lives also gives us clothes to wear, athletic shoes, bathing suits, raincoats, knapsacks for hiking, fabrics for our homes. Chemical fibers are worn by firefighters, by astronauts, mountain climbers, and woven into the fabric of clothing that everybody wears.

Now we move into the area where we learn about miracle chemical fibers, synthetics, polyesters. They are probably in most of the clothes in your closet, from simple work or business clothes to sports clothes and shimmery evening clothes for women.

But that' s not all synthetics are used to make toy animals, like teddy bears, long-lasting carpeting, curtains, tablecloths, blankets, quilts. Don' t forget ropes, bungee cords and sailboat rigging.

In front of you is an operating model of the devices that producing basic

polyester fibers. Through the video on the model, you will see how refined oil finally becomes white fibers in the polyester production process.

Look to your right as you walk along. Many products derived from petroleum are on display -- preservative film to cover leftover food, plastic bottles, drug capsules to model cars, garments, toys, electric irons to washing machines -- almost everything in daily life.

In the left corner you can dress yourself in fashionable fibers and change your look. And you can take pictures of yourself.

You can try the casual look in the garden, a shining dress on the catwalk or sportswear in the shooting range.

And you can have the fun of changing clothes made of different fibers for different settings and occasions -- simply by touching the computer screen.

You can also take a photo of yourself in the stylish clothes, in the setting of your choice. Press the "print" button, a DIY photo will soon come out.

Now try it yourself and have fun.

The third hall is right straight ahead

This hall explains the history of Shanghai Petrochemical, founded in 1972.

The Shanghai Petrochemical Co Ltd grew out of the Shanghai Petrochemical Complex, established in June 1972. It is an important base for China' s

petrochemical industry. The company now has 69 processing units – for oil refining, processing petrochemicals and producing plastics and synthetic fibers.

It has assets of around 27.6 billion yuan – that' s US\$3.68 billion -- and 22,900 regular staff members.

See the exhibit boards in the semicircle on your left. On your right there' s a large book on the table – it' s an “encyclopedia” of the petrochemical industry. It' s easy to browse: just touch the two tiny buttons on the left and right side. There' s more information at your fingertips.

A bit tired? As you leave the third hall, you can take a seat.

Now straight ahead is the last stop, the fourth hall of the museum.

Here we will learn more about the Communist Party of China' s role in the development of Shanghai Petrochemical. You will learn about the company' s strategic role as an energy producer and key industry within the 11th Five-Year Plan.

Let' s concluded our journey here. We hope you enjoyed your visit to the Shanghai Petrochemical Science & Technology Museum.

Address: 48 Jinyi Road, Jinshan District (At Shanghai Petrochemical Co Ltd)

Hours: Monday to Friday: 8:30am -- 4:30pm (closed on holidays)

Organized groups only (10 to 50 members preferred). Two days' advance notice required. Admission free.

Transport:

Metro Line 2, get off at Zhongshan Park Station, transfer to Bus Hushi Line, then take Bus Shihua No.1 Line

Metro Line 1, get off at Jinjiang Amusement Park Station, transfer to Shimei Line, take to last station (the Shihua coach station), then walk about 10 minutes or take a taxi (seven yuan for the first three kilometers)

Museum Tel: 5794-1941

Key Words:

1. Aerodynamics (n.) the branch of mechanics that deals with the motion of gases (especially air) and their effects on bodies in the flow 空气动力学

2. Synthetic resin (n.) a resin having a polymeric structure - especially a resin in the raw state. Used chiefly in plastics 合成树脂

3. Hydrocarbon (n.) an organic compound containing only carbon and hydrogen 碳氢化合物

4. Shale (n.) a sedimentary rock formed by the deposition of successive layers of clay 页岩,泥板岩

5. Ethylene (n.) flammable colorless gaseous alkene. Obtained from petroleum and natural gas and used in manufacturing many other chemicals. Sometimes used as an anesthetic 乙烯

6. Polymerization (n.) a chemical process that combines several monomers to form a polymer or polymeric compound 聚合

7. Polyester fiber (n.) a quick-drying resilient synthetic fiber consisting primarily of polyester 聚酯纤维