

## Tsinghua Develops 1,3-Propanediol Pilot Technology

The Chemical Engineering Department of Tsinghua University has successfully developed the 1,3-propanediol (PDO) pilot test technology through biological fermentation. It has also planned to construct a 20 000 t/a PDO project in collaboration with Heilongjiang Chenneng Bioengineering Co., Ltd. Design of the first phase 2 500 t/a PDO unit is in progress.

PDO is mainly used to synthesize PTT. PDO commercial production methods include the ethylene oxide carbonylation process and the acrylic aldehyde hydration process. Both processes use non-regenerative oil as basic raw material and generate toxic and hazardous inter-

mediates in the production. The biological synthesis process has advantages in environmental protection and resources. Some companies such as Du Pont claim that PDO commercial production units using the microbial fermentation process will be constructed, but no commercialization has yet been achieved.

Tsinghua University takes glucose and crude starch (such as cassava starch) as raw materials and uses dual-strain two-step fermentation process to produce PDO. The technology has passed pilot tests in 5000L fermentation tanks. As great amounts of organic acids (salts) are generated in the PDO fermentation, electro dialysis salt re-

moval technology is introduced into the PDO purification process and flocculation, condensation and fractionation are conducted to increase the product purity to 99.92% and the product yield to more than 80%. The product from the pilot test is sent to SINOPEC Yizheng Chemical Fiber Co., Ltd. and CNPC Liaoyang Co., Ltd. to make a comparison with imported products in the polymerization of PTT. Results show that key technical indexes of PTT produced with the new process such as intrinsic viscosity and color are better than imported products and can meet the requirements in polyester synthesis and textile sectors. ■

## Wet-Process Phosphoric Acid Process for Calcium Hydrophosphate Production

Hebei University of Science and Technology has used the patent of composite precipitation fluorine removal method invented by itself and developed a new process for the production of food-grade calcium hydrophosphate using wet-process phosphoric acid as raw material. The production cost of food-grade calcium hydrophosphate can hopefully be reduced by RMB800 per ton.

The production of food-grade calcium hydrophosphate in China usually uses the hot-process phosphoric acid process. Phosphate rock and coke mixed at a certain ratio are sintered in an electric furnace to produce yellow

phosphorus. Producing one ton of yellow phosphorus needs 14 000 KWH of power. In spite of the high product purity and the controllable product quality, the cost of raw materials in the food-grade calcium hydrophosphate production through the hot-process phosphoric acid process is maintained at a high level. Most producers can only gain small profits or even suffer loss.

The new process developed by Hebei University of Science and Technology uses its own patent of composite precipitation fluorine removal method to conduct initial purification and intensive purification to wet-process phosphoric acid until it reaches the

food-grade product standard. Neutralization with high-purity  $\text{Ca}(\text{OH})_2$  is then conducted to produce food-grade calcium hydrophosphate in conformity with the national standard. Compared with the hot-process phosphoric acid process and the organic solvent extraction and purification phosphoric acid process, the new process can reduce the product cost by around RMB800 per ton.

Food-grade calcium hydrophosphate is a food additive with two nutritious elements of phosphorus and calcium. It can be used as bulking agent, dough improver, nutrition supplement, emulsifier and stabilizer in the food sector. ■

## Lithium Ion Cell Research and Development Base Established

Xi'an Ronghua New Material Co., Ltd. and Xi'an Jiaotong University have jointly established Jiaoda Ronghua Lithium Ion Cell Research and Development Base. It is the biggest lithium ion cell production and R&D center in the western region. Research units in quite a few of universities and colleges will be united through the base to conduct in-depth research of cathode multi-polar materials and rare earth materials for lithium ion cells.

The use of anode material lithium

cobaltate in lithium ion cells has always been a focus in the nationalization of the lithium ion cell sector. Xi'an Ronghua New Material Co., Ltd. is jointly funded by Xi'an Ronghua Group Co., Ltd., Beijing SDIC Venture Capital Investment Co., Ltd. and CAS Qinghai Salt Lake Research Institute. It is mainly engaged in the research and development of anode materials for cobalt, manganese and lithium ion cells and the production of lithium cobaltate with independent intellec-

tual property. Tests on lithium cobaltate produced in the company prove that 6 major performance indexes such as specific volume are close to similar foreign materials and what is more important, the cyclic service life of cells are much better. The 400 t/a production line of lithium ion cell anode material lithium cobaltate constructed by the company started production in April this year. The second-phase project will have a 1 000 t/a capacity. ■

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