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The ARO-FE Tech Briefs... ... in Environmental Science and Chemistry

The Tech Briefs (TBs) describe Japanese technological advances in a wide spectrum of disciplines relevant to ARO. Japanese scientists working for ARO-FE write these TBs and compose lists of titles of articles based on information reported in Japanese newspapers such as the Nikkan Kogyo and Nikkei Sangyo Shimbun. These newspapers specialize in the reporting of industrial news, rank highest in terms of both quality and quantity of articles, and have a long history and high reputation among researchers, engineers, and businessmen in Japan. Topics covered include fundamental science and technology, information and telecommunications, electronics, machinery and robots, automobiles, aircraft, defense, chemistry, energy, materials, architecture, housing, city development, food, medicine, and economics. Figure 1 shows the ARO-FE Scientists responsible for the TBs: Left to right: Dr. T.Miyata (Environmental & Chemistry), Dr. H. Kido (Materials); Dr. H Toyama (Physics).

Sample of the Latest Environmental Tech Briefs:

1. Hayashibara & AIST developed low cost and high performance solar energy battery using an organic pigment. *Nikkei Sangyo; Nikkan Kogyo -11Sep 02*

The conventional solar battery, developed by Hayashibara & AIST utilizes a pigment of ruthenium compound as sensitizer. The new process uses coumalin compound which can be produced at low cost and can absorb wide range of light. By using this new product, the energy exchange efficiency becomes 7.45 %. This is nearly same as silicon solar battery (8-15%), but its production cost is drastically reduced.



2. Sanyo Electric developed a water treatment technology that eliminates N and P by using electrolysis technology. *Nikkei Sangyo, Nikkan Kogyo - 12/Sep/2002*

Sanyo Electric developed a water treatment technology that eliminates N and P by using electrolysis technology. This process uses iron electrolyte and non-soluble metal electrolyte. By electrolysis reaction, the N in wastewater is removed by using iron electrolyte as minus, and then P in wastewater is precipitated by using iron electrolyte as plus. By using this system, the required volume of equipment can be reduced 1/50, and the treatment speed increase 60 times than the conventional ones. Moreover, operation cost is half of the conventional ones because of no required chemical agents.

3. Europe and Japan will start the ASR (Automobile Shredder Residue) treatment in near future by using polymer recovering and gasification technology respectively. *Nikkei Sangyo 24/Sep/2002*

Europe and Japan will start the ASR (Automobile Shredder Residue) treatment in near future by using polymer recovering and gasification technology respectively. ASR is the residue after the valuable parts are taken out, and it is a mixture of metal, resin, fiber and glass, that has 20-30 wt% of total weight of the automobile. Salyp Co., in Europe, treats ASR by heating and separating the resin by changing the temperature. Ebara Co., in Japan, applies gasification technology to recover fuel gas for power generation. Both process will be in operation in near future.

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