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DOE and NSF to enhance support for Plasma Science

In July, more than 35 grants were awarded by DOE and NSF in the field of plasma science and engineering. The grants total more than \$12 million.

DOE joined with NSF to create this new initiative in support of basic plasma research in spring 1996, thereby combining the energies of both agencies. DOE plans to increase its spending in this area from \$2 million to \$7 million over the next five years.

NSF's press release announcing the grants remarks that "Europe and Japan have invested far more in plasma science and engineering than the United States." Most people simply failed to recognize the importance of plasma science at a time when plasma skills are needed more than ever.

The NSF further notes that "because plasma science and engineering in the U.S. system was divided among other disciplines, it almost fell through the cracks."

For further information please contact the NSF Directorate for Engineering, (703) 306-1300, Fax (703) 306-0289, email: enginfo@nsf.gov.

Plasma Device Reduces Auto Emissions

A breakthrough device for cars, developed by MIT engineers, can potentially turn vegetable oil into high-quality fuel, thereby reducing the greenhouse effect and the nation's dependence on crude oil imports. Furthermore, the traditional

fuel's emission of nitrogen oxide could be reduced by a factor of five to ten.

The device, called a "Plasmatron," is the size of a large soup can and needs only one kilowatt to operate.

The device works like an onboard "oil refinery." The injected fuel is exposed to a plasma which accelerates the reaction rates, thus converting a wide variety of fuels into high-quality gas. In most cases, the conversion rate is above 90 percent. Similar devices are already being used for industrial applications like metallurgical processing, but these are much larger than the MIT Plasmatron.

Funding and support for the project have been provided by the DOE Office of Heavy Vehicle Technologies.

MIT scientists believe that the Plasmatron has a great potential for the immediate future, since it could be produced relatively inexpensively, and only minor modifications are needed to install it in existing car models.

For further information please contact Daniel Cohn, MIT Plasma Science and Fusion Center, (617) 253-5524, email: cohn@psfc.mit.edu.

Plasma Processor Recovers Radioactive Waste

Houston based Eastlund Scientific Enterprises (ESEC) has developed a "Large Volume Plasma Processor" that could set a new standard in dealing with radioactive waste.

So far, radioactive waste recovery is a difficult and very expensive process based on chemical processing solutions. The new plasma processor utilizes a plasma similar in size to the ones that

are currently used in fusion energy test reactors. The energy produced by the plasma is high enough to vaporize instantly any liquid or solid, creating an environment in which each atom behaves in a different way. Therefore, radioactive and nonradioactive elements can be separated quickly and reliably.

In contrast to currently used processes, the plasma processor does not require the construction of large and costly facilities, such as tanks. Furthermore, it can start the separation process immediately, whereas a chemical process takes years to complete.

ESEC is currently discussing its solution with potential users in the government as well as in the corporate sector. It estimates that the prototype demonstrations could be completed within two years.

For further information:
www.eastlundscience.com.

Plasma Scientist Becomes Director of Scripps Institution of Oceanography

Charles F. Kennel, former Associate Director of UCLA's Institute for Plasma Physics and Fusion Research, will be the new director of Scripps Institution of Oceanography at the University of California, San Diego.

Kennel will assume his duties at Scripps in the spring, succeeding Edward A. Frieman who retired after 10 years.

Kennel received a bachelor's degree in astronomy from Harvard College in 1959, and a Ph.D. in Astrophysical Sciences from Princeton University in 1964. From 1994-96, he served as Associate Administrator for NASA's Mission to Planet Earth program. In 1996, he became Executive Vice Chancellor at UCLA.

In November 1997, Kennel received the Maxwell Prize for Plasma Physics from the American Physical Society, Division of Plasma Physics, for his achievements in plasma astrophysics.

For further information please contact IO

Communications, Scripps Institution of Oceanography, University of California at San Diego, email: siocomm@sio.ucsd.edu

Plasma Technology for Next Generation TV's

Philips Electronics, Sony and Sharp are cooperating to develop a new generation of large-sized flat-panel displays, using Plasma-Addressed Liquid Crystal (PALC) technology. The discharge phenomena of plasma, usually used as a light-emitting source, is here used as an electrical on/off switch, essentially acting as a virtual transistor.

Sony already presented a PALC TV model that demonstrates an overall improved television technology, and could herald a new era of ultra-thin flat-panel screens. It has a 25-inch screen, but is only 10 inches thick and weighs under 4 pounds. Furthermore, the PALC TV consumes far less energy than conventional TVs of the same size. Wall-hanging televisions up to 50 inches in size and space-saving, high-resolution computer displays will be developed within the near future.

The use of plasma technology results in a relatively simple structure of the display, which can be produced in a simple manufacturing process and at low cost. Therefore, large screens could be targeted at the mass market. So far, large flat-panel displays carry a high price and are only able to reach a small range of professional customers.

For more information please contact Cor Vren, Philips Electronics N.V., +31-40-272 2790, fax +31-40-2724547 or send an email to Sony Consumer Electronics, contact@sel.sony.com.

Plasma Science Articles Needed

If you are aware of plasma science related research or applications which you think are worthy of being highlighted in the CPS Plasma Page, please send a three to five paragraph description to: Editor, The Plasma Page, Coalition for Plasma Science, 1615 L Street, N.W., N.W., Washington, D.C. 20036. Be sure to include in the description the funding source for the research and a contact name for more information.