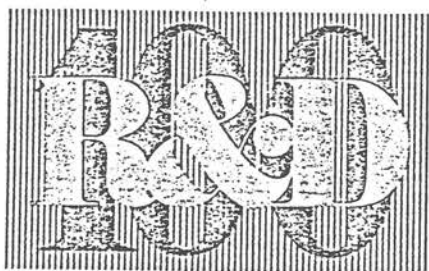


# R&D Magazine Presents The 1989 R&D 100 Award Winners

By Ted Katauskas, Assistant Editor, R&D magazine



## ANALYTICAL INSTRUMENTS

Temperature, energy, and time-resolved spectrophotometer (LPS-521) uses a laser plasma source to measure the complete optical properties and electronic structures of ceramics, superconductors, and semiconducting materials.

Single-crystal, polycrystalline, and thin-film samples can be analyzed at

temperatures between 10 and 2300 K with a time resolution of 10 nsec and a spectral resolution of 5 meV. The light source, which has an energy range of 1.7 to 32 eV, is synchronized with a photon-counting, image-intensified optical multichannel analyzer.

Outstanding capabilities of the LPS-521 include its temperature range, energy range, spectral resolution, and time-resolution capabilities. This mov-

## HONORABLE MENTION

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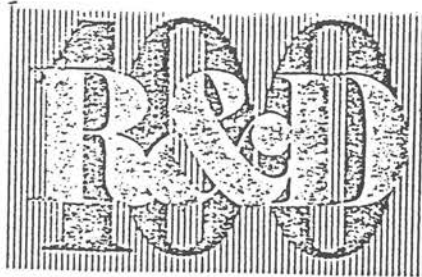
Lens stabilizing system for Panasonic camcorder (Model PV-460) uses super-compact gyro sensors and an actuator control to keep a horizontally and vertically rotatable lens unit pointed in a fixed shooting direction.

Its Electronic Image Stabilization (EIS) system compensates for an unsteady hand and helps eliminate the bouncing effect found in most hand-held recordings. Using specially designed software, the system can recognize any intentional camera movement, such as panning, and override the automatic EIS system.

The lens stabilizer, which weighs one pound, outperforms conventional electromechanical systems that use highly sensitive mechanically rotating gyro-sensors and weigh from 30 to 200 lb.

Matsushita Electric Industrial Co. Ltd., Osaka, Japan. Developer: Mitsunori Oshima. Price: \$1,995.

Circle 454



High-fiber, noncaloric flour substitute can be used in place of flour in a variety of food products.

This high-fiber flour is produced by treating bran, vegetable, or fruit pulp with dilute hydrogen peroxide under alkaline conditions. When moistened, alkaline hydrogen-peroxide-treated plant materials form a gel-like mixture that is deformable and can be substituted for flour without altering the taste, texture, or baking performance of the food.

This makes it possible to bake reduced-calorie breads with a greater dietary fiber content than whole wheat bread and with the same taste and texture as white bread. These materials can be used to increase the

fiber content of frostings, pie fillings, puddings, and snack foods.

U.S. Dept. of Agriculture, Eastern Regional Research Center, Philadelphia, IL. Developer: J. Michael Gould. Price: \$0.75 to \$1/lb. Circle 455

#### ELECTRICAL & ELECTRONIC DEVICE

High-speed GaAs prescaler (models MGF8001, -8002, and -8003) is a GaAs digital integrated circuit for mobile communication systems.

This device meets the speed and low power dissipation demands of mobile communication equipment. It is operable up to 1 GHz with a dissipation of 20 mW, which is only a fifth of the dissipation of other products. This offers promise for equipment that is even more compact and lightweight than is possible with current technology.

Mitsubishi Electric Corp., Fukuoka, Japan. Developers: A research group. Price: \$5. Circle 456

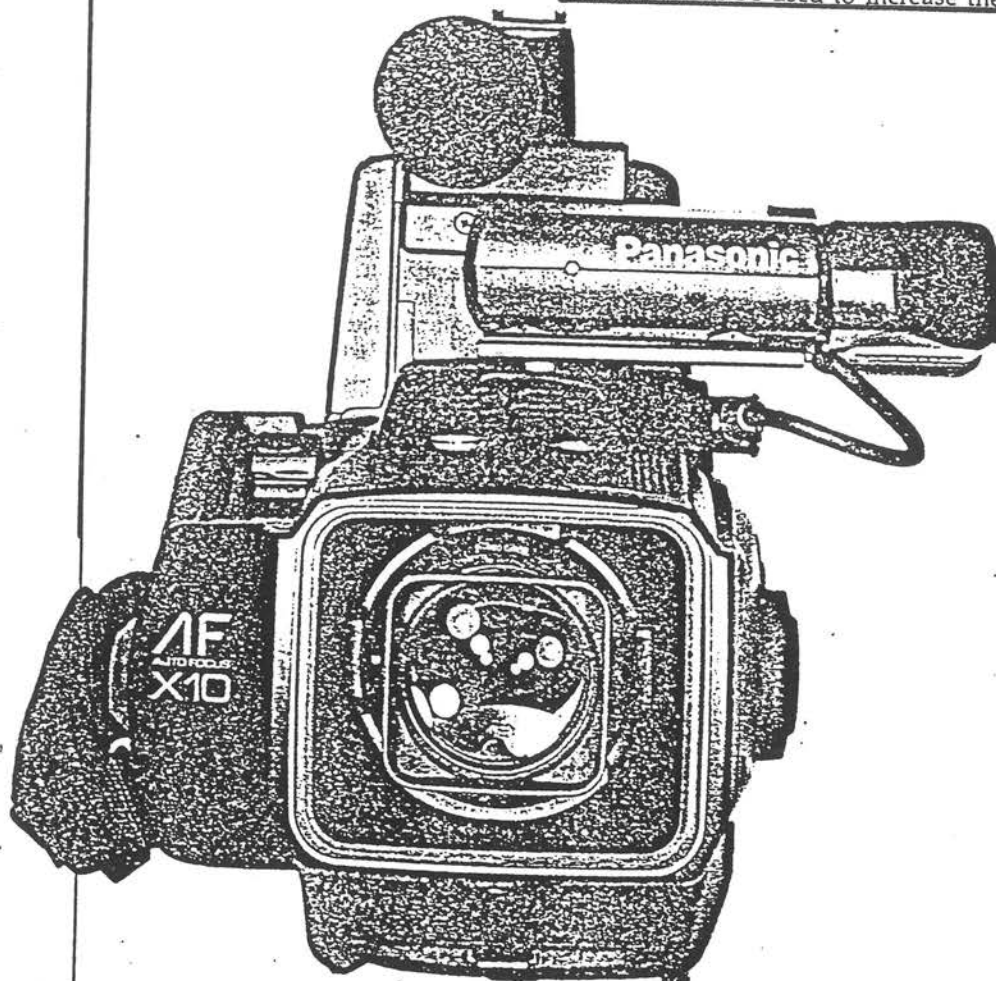
Multistage depressed collector (MSDC) klystron amplifier is a vacuum tube amplifier for UHF television transmitters that dramatically reduces power consumption.

Originally designed to increase the efficiency of spaceborne radio transmitters, this device uses the multistage depressed collector to improve overall electrical system efficiency by recovering some of the residual power from the spent electron beam that typically would be dissipated as heat. The MSDC cuts power consumption of transmitters in half, resulting in annual savings of 400,000 kWh and \$30,000 per klystron transmitter.

It can be used to improve the efficiency of microwave communication systems such as uplinks for synchronous communications satellites, microwave heating systems, and particle beam accelerators.

NASA Lewis Research Center, Cleveland, a joint entry with Vaco Associates Inc., Palo Alto, CA. Developer: Earl McCune. Price: \$40,000. Circle 457

Gbit monolithic optical integrated circuit (OEIC) accepts a single optically modulated optical input signal and produces a high-speed digital output via optical fiber and produces a



Matsushita Electric's gyro sensors and an actuator control, used in this Panasonic Camcorder, eliminate the bouncing effect common to most hand-held units.