

"The North American Photonics Association serves the field of photonics by encouraging programs where the photon is the recording medium compared to the electron in other systems."

This decade will provide several new opportunities for better introduction into the field of Photonics (Photo Instrumentation) and its related benefits for data/information systems. There appears to be a growing awareness of the need for introducing new practitioners to the complexities and advantages of using image forming equipment to gather data in addition to electronic systems. The developments in television equipment that can now achieve framing ratio equivalent to 2000 FPS, is one of the major breakthroughs that have occurred.

New Organization

A new organization has been formed to serve the needs of the international scientific community. The North American Pho-



Figure P-1. Video system, SP2000.

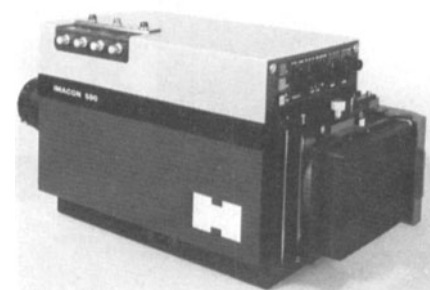


Figure P-2. Imacon 500 system.

tonics Association was created on 5 October 1980 by a group of leading experts in the field of high speed photography.

The word "Photonics" describes the techniques and theories that pertain to the detection, recording and measurement of phenomena on photosensitive material. The recording medium is the photon as compared to the electron for other systems.

The purpose of the organization is to serve the field of photonics by initiating and encouraging programs to expand and advance photonic technology in science engineering and industry.

The Association has representatives throughout the United States and Canada who will aid in education, training, and advice to give greater dissemination of information on high speed photography as well as other aspects of photonics.

The officers are: President, William G. Hyzer; Vice-President, Donal Clayton; Secretary-Treasurer, Prof. Robert Rowlands.

The XIV International Congress on High Speed Photography and Photonics was held in Moscow, 20-25 October 1980. There were approximately 800 registrants with 80 to 100 registrations from outside the USSR. The two largest foreign delegations were from Japan and England. Nine people from the United States attended.

William G. Hyzer attended as the official United States delegate and he reported that he felt it was "highly successful, well organized, the facilities were excellent, and both the technical and social activities were on a par with the best tradition of past congresses."

Plans are firming up for the XVth International Congress to be held in San Diego, Calif. during the week of 21 August 1982. The tentative programs include provisions for about 120 technical papers plus several workshops and special invited papers.

Equipment

There have been two major breakthroughs in video high speed recording equipment. The Instar System manufactured by Video-Logic Corporation of Sunnyvale, California can freeze a picture to 1.5 microseconds, reducing the possibility of image motion movement blur. This translates into stopping action of an object moving at a rate of 2400 ft/min to movement of less than 0.00006 inches of move-

ment. The system has been improved to provide the equivalent of 750 frames/s in motion picture terms.

Spin Physics of San Diego, California developed a video system capable of 2000 full frames/s with a maximum capability of 12,000 pictures/s. The SP2000 is a digital system as compared with the Instar analog system (Fig. P-1).

Another recent development is that of using lasers to color correct and print 35-mm slides.* The printer passes three coherent laser beams through the slide. The red, blue, and green beams are picked up by photomultiplier tubes which generate electronic signals controlled by the densities of the image. A computer controls the output of these lasers to make an exposure on film. Laser Color Laboratories of West Palm Beach, Florida provides this service.

The ultra high speed field has been improved by the introduction of the Hadland Photonics Imacon 500 System (Fig. P-2). This new camera incorporates a new image tube, the Emichron, made by EMI which features extremely high spatial resolution, very high time resolution and a 1:1 electron-optical magnification. The system is much lighter in weight and more compact than previous systems.

A paper by Dr. Lee A. Cross of the University of Dayton (Ohio) Research Institute entitled "High Resolution, High Framing Rate Photographic Diagnostic Techniques" explores the advantages of laser technology applied to high speed photography. He notes that: "Due to the continued improvement in the performance of laser systems, it is now possible to extend this type of photography to the high-framing rate mode. A laser can be repetitively switched so as to produce a succession of very short duration, very high intensity light pulses which can provide the illumination to produce high-resolution, high repetition-rate framing records. In such a system, the function of the camera is to transport the recording film in an appropriate manner and to image the subject onto the film." He noted also, "the high average power required in such an application dictates that a solid state laser should be used." — *Lincoln L. Endelman, Vice-President for Photonic Affairs.*

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*"Electronics Colour Prints made with Laser Beams"; Peggy Sealfon, *New York Times*, March 11, 1979.