NEWS from ARO-FE (September 2002)

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1. Workshop on Non-Destructive Evaluation of High Valued Engineering Systems:

Provided by Dr. S. G. Sampath of the ARL European Research Office.

"Composite Touching Sens

NDE/T Workshop

2. Nano-Composite "Touching" Sensor being developed at the University of Osaka by Prof. K. Niihara's Research Group.

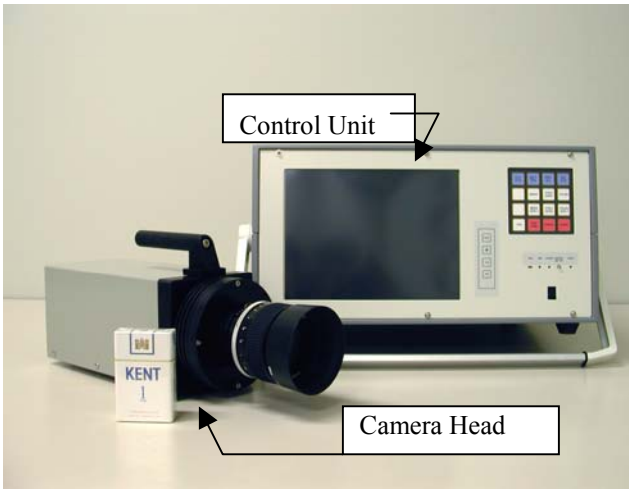
3. Nanostructured Magnetic Materials:

Nanostructured metallic and ceramic materials have unique mechanical and magnetic properties. Numerous programs have been currently undertaken to tailor advanced structural and functional nanostructured materials. Potential industrial-oriented applications include magnetic data storage, magnetic sensors, magnetic tunnel junctions, random access memories, spintronic devices etc.. I have asked Dr. Jun Kameda of the ONRIFO-Asia, and he gladly agreed, to share the latest information he collected on the subject title. Please click on the Word icon to view Dr. Kameda's review of Hono and Ohnuma paper on Magnetic Nanostructures comprising Soft and Hard magnetic nanocrystalline Materials. These materials have recently been incorporated into MEMS devices including microactuators, sensors, micromotors and frictionless microgears. As a result, MEMS are more stable for high force and large gap applications, more robust in harsh (dust and humidity) environments and can be actuated with low cost voltage controllers.

NanoMagRep. doc

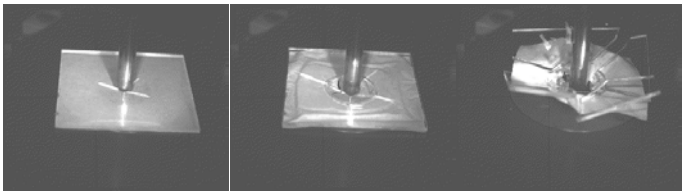
4. A CCD Image Sensor for Continuous Image Capturing:

Yasushi KONDO, Hiromasa MARUNO, Kenji TAKUBO, Hideki TOMINAGA, Hideki SOYA and Takeharu ETON, Technology Research Laboratory, Shimazu Corporation, have developed a high-speed video camera with the in-situ storage image sensor (ISIS) that has its own in-situ storage area of image signals in each pixel of the sensor. The video camera can capture 100 continuous images at 1,000,000 frames per second with about 81,000 pixels. With this camera they can capture and analyze high-speed phenomena never previously observed. It can record an ultrahigh-speed image because the image signals are simultaneously recorded in that area without being read out from the sensor during image capturing.



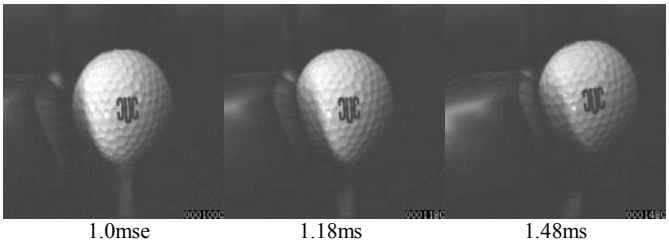
1.2msec 4.7msec 10.2msec

Figure 8. The destruction of the high-strength concrete (Halogen lamp, Frame rate: 10,000 frame per second?



190μ sec 260μ sec 810μ sec

Figure 9. The destruction of the acrylic plate by the punching test machine (Halogen lamp, Frame rate: 10,000 frame per second)



1.0mse 1.18ms 1.48ms

Figure 10. The hitting impact of a golf ball (Sunlight? Frame rate: 50,000 frame per second?