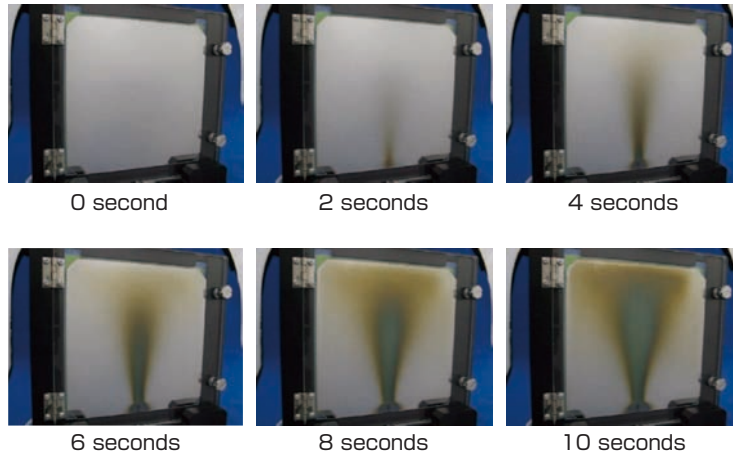


Hydrogen sensor using Mg-Ni switchable mirror thin film Visualization of hydrogen gas diffusion

We developed a new hydrogen sensor using Mg-Ni switchable mirror thin film. It can be operated without heating with a wide detection range. Also combination use of a switchable mirror thin film and slab wave guide enables to realize a hydrogen sensor with high sensitivity. Using a switchable mirror thin film coated sheet, we can visualize hydrogen diffusion process directly, which is a new way of hydrogen sensing by means of our eyes. This hydrogen visualization sheet will be commercialized shortly.



Visualization of hydrogen diffusion

Transitional detection of hydrogen when a pipe is placed upward in the back lower center of a switchable mirror thin film (sheet size:140 mm×130 mm)

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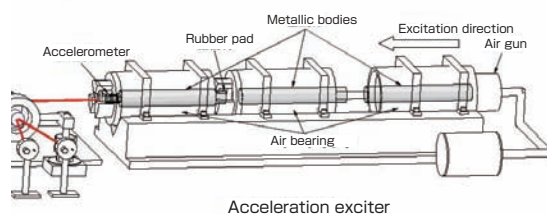
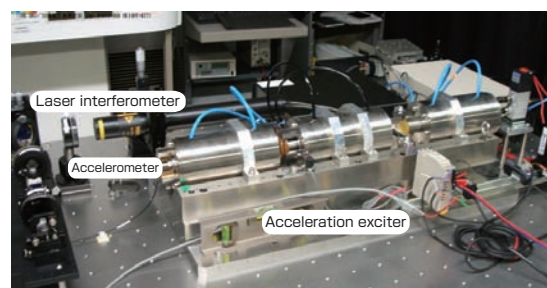
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AIST TODAY Vol.10 No.11 p.15 (2010)

Metrology and Measurement Science

Development of acceleration standard for safety evaluation Calibration technique supporting acceleration measurement up to 5,000 m/s²

Shock acceleration measurement is widely used in a variety of applications including air-bag control of automobiles and drop testing of mobile instruments, in which accelerometers are a key device to evaluate human safety or product reliability. However, vibration acceleration available in the calibration service of accelerometers has been limited to several hundreds of m/s² due to the performance of vibration exciters. Therefore, it is desired to establish a calibration service up to 10,000 m/s² to cover recent industrial demands. Here we have developed a shock acceleration calibration system to calibrate the sensitivity of accelerometers precisely. The developed calibration system can calibrate accelerometers with the expanded uncertainty ($k=2$) of less than 0.8 % in the range from 200 m/s² to 5,000 m/s².



Shock acceleration calibration system (top) and schematic diagram of shock acceleration exciter (bottom)

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AIST TODAY Vol.10 No.10 p.11 (2010)