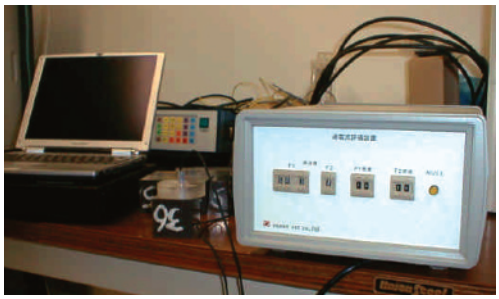
Material Characterization of Cast Iron by Means of Eddy Current Testing

Eddy current testing was applied for quantitative evaluation of matrix structure and hardness of ductile cast iron.

The correlation coefficient(R) between Brinell hardness and eddy current signal of 50kHz was as high as 0.92 for many kinds of specimens, and 0.96 for the selected specimens having similar chemical composition and graphite shape.

The photograph shows the eddy current tester(right), detecting coil on a cast iron specimen and display panel to show measured and calculated result (using a PC).



Eddy current hardness tester for Cast iron

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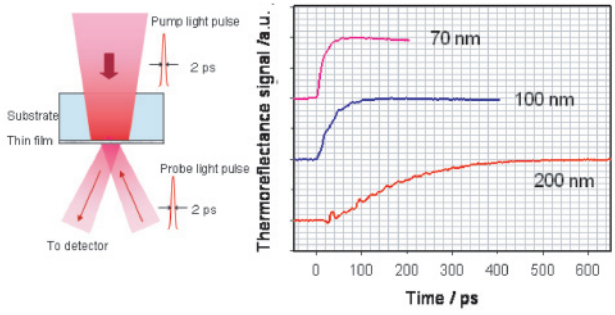
Thermophysical Property Measurements of Submicrometer thin Films using a Picosecond Thermoreflectance Technique

Reliable thermophysical properties of submicrometer thin films are necessary for thermal design of advanced devices such as high density optical disks or highly integrated semiconductor devices. In order to measure thermal diffusivities of thin films thinner than 1 micrometer, a picosecond thermoreflectance measurement system has been developed. A film face of a transparent substrate side is heated by picosecond laser pulses and the temperature change on the front face opposite to the heated area is probed by the reflected intensity of other picosecond laser pulses. The heat diffusion across the thin film can be observed directly by this method. The thermal diffusivity of the thin film is calculated from the heat diffusion time across the thin film and the thickness.



Picosecond thermoreflectance signals of molybdenum thin films deposited on glass substrates

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