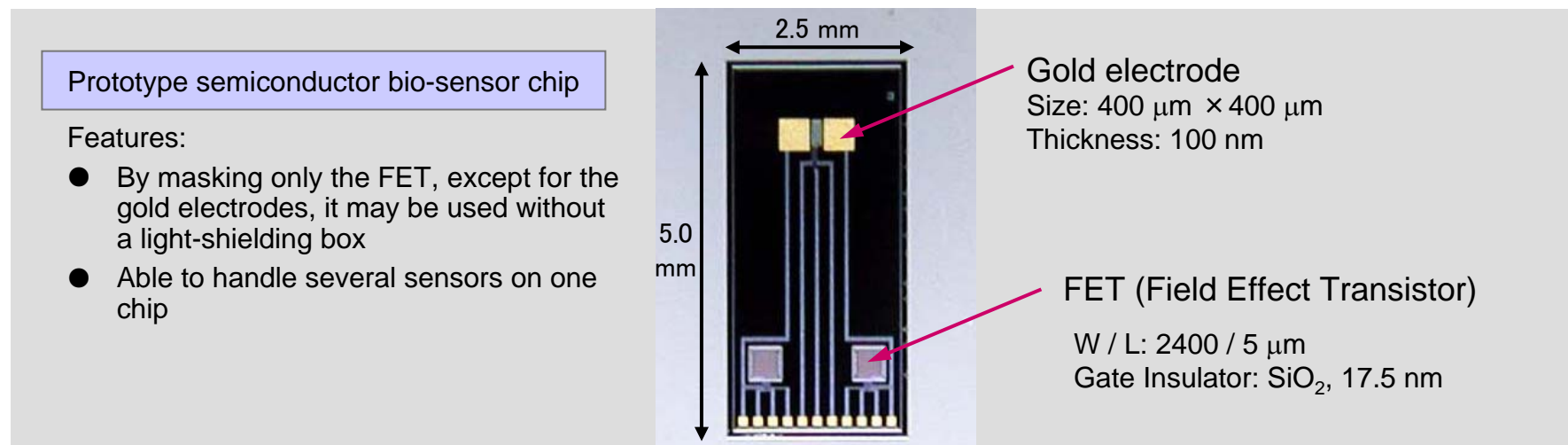


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## Semiconductor bio-sensor chip for measurement of trace proteins

- Electrical measurement method applied to increase detection sensitivity to 1 picogram per milliliter -



The Central Research Laboratory of Hitachi, Ltd. has succeeded in the development of a semiconductor bio-sensor chip capable of measuring trace amounts of protein in samples. Conventionally, measurement of target proteins in blood tests or food safety tests, often use an enzyme immunoassay, in which the measurement is performed by detecting the enzyme-catalyzed product using optical equipment. This work proposes the use of a semiconductor sensor chip that introduces electrical measurement for the first time into the enzyme immunoassay, and confirms that detection sensitivity was increased by one order of magnitude to 1 picogram per milliliter, in comparison to conventional methods. As this technique does not require optical equipment, it can be employed in a compact portable system which in the future, may be taken into the field to measure proteins or bacterial for medical or food safety testing.

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