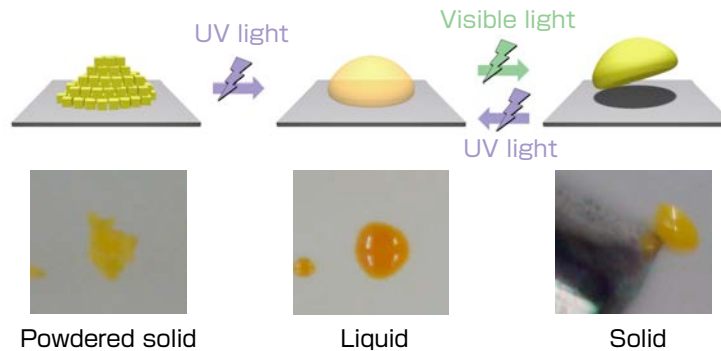


## Materials able to be repeatedly liquefied and solidified at room temperature by light irradiation

### Reusable by fluidizing and hardening without the application of heat

We have developed new photoresponsive materials. Each of the new photo responsive materials is a liquid crystalline substance produced by the combination of a skeleton of sugar alcohol and azobenzene groups, and is able to be repeatedly liquefied and solidified by irradiation of wavelength-controlled light without heating or cooling. This phenomenon is the first example of a selective and reversible transition between solid and liquid states of a single substance through the action of light alone at room temperature. The use of these materials is expected to contribute to the development of entirely new highly functional materials such as reusable and reworkable light-controlled adhesives.



Upon UV light irradiation, the solid powder liquefies and forms droplets; visible light irradiation induces resolidification of the material.

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## Metrology and Measurement Science

## Development of small radiation dosimeter

### Long battery life of more than 1 year on a button cell battery

We have developed a personal radiation dosimeter in order to measure radiation dose from the radioactive materials released by the Fukushima Daiichi nuclear disaster. The dosimeter is small, lightweight (less than 20 g), and can be used for more than one year on a 3 V lithium button cell battery. The detection device is a silicon diode that is sensitive to gamma-rays. The dose time course is recorded in a non volatile memory. To prevent noise counts induced by mechanical shocks, a shock sensor is installed. The dosimeter can notify users of high radiation doses through a buzzer and a LED light signal. Users can check the recorded radiation dose data by connecting to a computer via a specialized adapter.



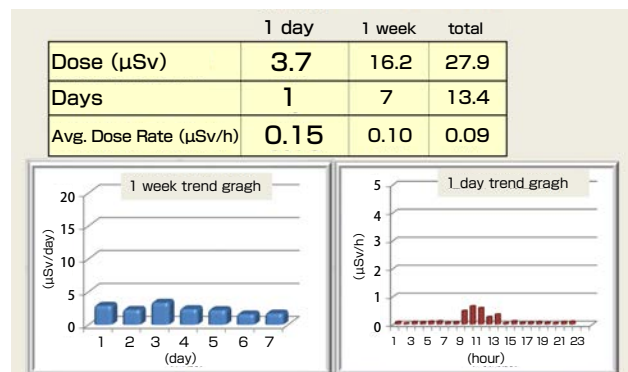
Personal radiation dosimeter (right) and 500 yen coin (left)

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A captured screen of the display software for the radiation dosimeter