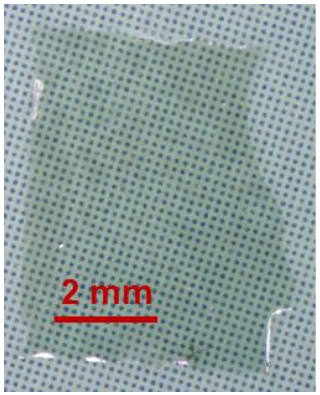
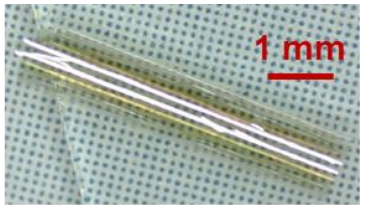
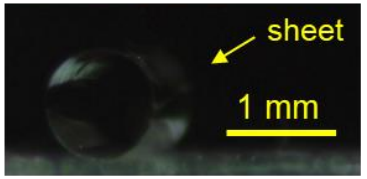
Hokkaido Univ. Technology

Light-driven actuator

To realize an actuator driven by optical stimulation using inorganic materials.







Overview

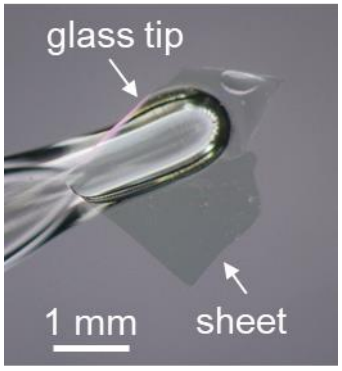
The present invention relates to a light-driven actuator configured to output mechanical motion by utilizing the phenomenon that a material is distorted in response to a light stimulus. Conventionally, in this field, actuators utilizing the phenomenon that organic materials undergo a reversible structural change by a light stimulus have been developed, but there have been problems such as slow driving speed.

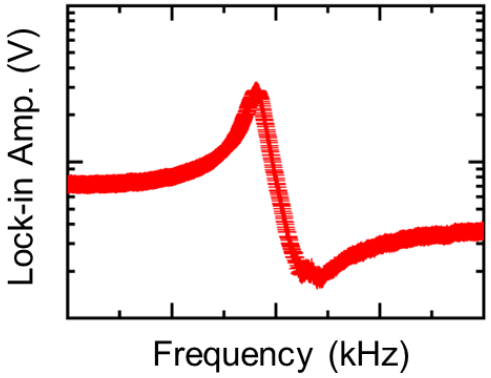
In the course of research focusing on inorganic dielectric materials, the inventors succeeded in thinning an oxide material as a single crystal to form a sheet. It was experimentally confirmed that the sheet deforms faster than before in response to light in the ultraviolet range, and the present invention was completed.

Product Application

- Remote drive device by light
- Valve operation
- Flow control

Frequency feature





YouTube：Light-driven actuator

Related Works

[1] Lizhikun Gong, Mian Wei, Rui Yu, Hiromichi Ohta, and Tsukasa Katayama, ACS Nano 2022, 16, 12, 21013–21019
[2] R. Yu, L. Gong, H. Ohta, and T. Katayama*, ACS Appl. Electron. Mater. 5, 9, 5234 (2023).

IP Data

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