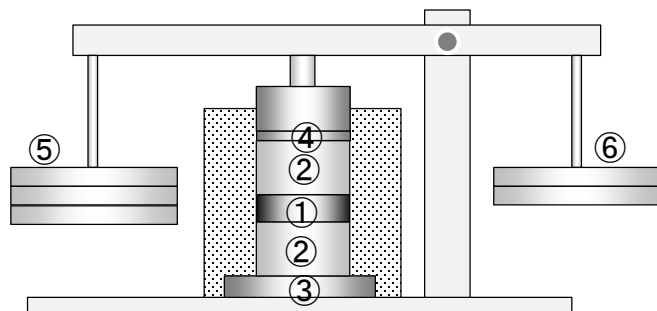
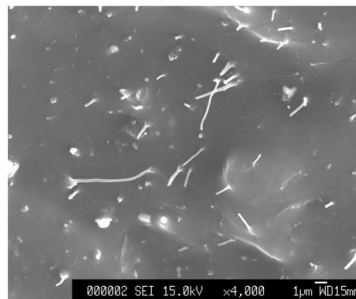


Development of Thermal Conductivity Measurement of Complex Material

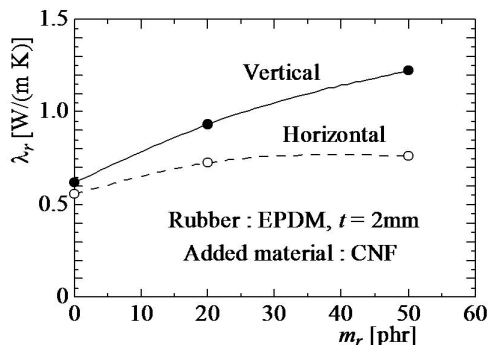
Associate Professor Masaaki Okuyama



①Specimen ②Reference rods ③Cooling block
④Rubber heater ⑤Weight ⑥Balancing weight
Fig.1 Schematic of measuring apparatus



SEM image of EPDM
added with CNF



Effect of additive amount and
orientation of CNF on thermal
conductivity of EPDM

Fig.2 Addition of CNF to EPDM and its effect of
thermal conductivity improvement

Content:

Generally, substances like ethylene propylene diene rubber (EPDM) and grease have low thermal conductivity, but it is said that the thermal conductivity of such substances can be improved by adding a substance with high thermal conductivity to them. On the other hand, regarding the method of accurately measuring the thermal conductivity of composite materials composed of multiple substances it is still in the research stage. In our laboratory, we have made a thermal conductivity measuring device based on the flat plate comparison method, and have been conducting research aiming at improving the measurement accuracy. So far, we have experimentally clarified that the thermal conductivity of EPDM increases with added amount of carbon nanofiber (CNF) to EPDM.

Appeal point:

Applying the knowledge obtained from this research, we are promoting the development of high-accuracy measurement methods for the thermal conductivity of composite materials and the improvement of thermal conductivity such as EPDM.

Yamagata University Graduate School of Science and Engineering
Research Interest : Heat Transfer

E-mail : tg017@yz.yamagata-u.ac.jp

Tel : +81-238-26-3257

Fax : +81-238-26-3257

HP : <https://mech.yz.yamagata-u.ac.jp/staff/ene/okuyama.html>

