Development of Measurement Tools for R&D of Novel Thermoelectric Material

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Abstract
Recently, technique of thermoelectric generation has been paid attention to recycle waste heat. The performance of a thermoelectric material is evaluated Seebeck coefficient, thermal conductivity and electric resistivity. Ulvac-Riko Inc. has been developing Thermoelectronic Characteristics Evaluation Instrument (ZEM) designed for simultaneous measurement of Seebeck coefficient and electric resistivity, and Laser Flash Thermal Constant Measuring System (TC) designed for simultaneous measurement of thermal diffusivity and specific heat capacity. Thermal conductivity is estimated from the result of TC and density. Novel new thermoelectric materials have easily complicated electron structure and micro construction in sample. Development of distribution measurement instrument is required to evaluate homogeneity in sample. We have been developing Scanning Thermal Probe Micro-analyzer (STPM) designed for simultaneous measurement of the distribution of Seebeck coefficient and thermal conductivity.

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