

Normal Spectral Emissivity Measurement at KRISS

Geun Woo Lee^{C.S}, Sangho Jeon, Seung-Nam Park, Su Yong Kwon and Sang Hyun Lee
Division of Physical Metrology, Korea Research Institute of Standards and Science, Daejeon, Korea

Emissivity is an important quantity for non-contact temperature measurement in the steel industry, space and planetary science, medical applications, and so on. Although precise and standard measurement of the emissivity has been highly desired, it is still difficult in general. We have recently developed an instrument to measure normal spectral emissivity using FT-IR spectrometer with 150 °C ~ 500 °C and 2.5 um ~ 25 um range at the Korea Research Institute of Standards and Science (KRISS). The sample furnace is designed to heat samples from 50 °C ~ 1000 °C with water cooling under high vacuum (10^{-6} Torr), and to measure directional emissivity with angle. We will show the measurement capability of normal spectral emissivity by evaluating the uncertainty with various materials (ceramics, metals, and paints) as a function of wavelength, angle, and roughness. Our results are compared with previous works and the importance of the reflection effect by the sample at long wavelength is discussed.