PARTICLE SIZE ANALYSIS OF SUB MICRON MATERIALS USING ULTRA SMALL ANGLE X-RAY SCATTERING

Keigo Nagao, Takayuki Konya, Ryuji Matsuo and Yoshio Iwasaki
Rigaku Corporation
3 – 9 – 12 Akishima-shi Matsubara-cho, Tokyo 196-8666, Japan

Small angle X-ray scattering (SAXS) is the most useful method to evaluate the particle size and the molecular structure in nano materials. The conventional SAXS instrument (for example, three slits geometry) is limited to 100nm. Recently, the measurement of sub micron scale using SAXS is required in order to evaluate the property of various materials. In this range, it needs to collect the profile data less than $0.07nm^{-1}$ in order to analyze using SAXS for sub micron particle. Right now, we have succeeded to take a ultra small angle X-ray scattering (USAXS) data easily using the Rigaku SmartLab with pseudo Bonse-Hart geometry configuration. In other word, the SmartLab can support the range from sub nano to sub micron scale by WAXS, SAXS and USAXS. In this presentation, the small angle resolution in this geometry has been evaluated. We will report some examples of sub micron materials using the SmartLab with pseudo Bonse-Hart geometry configuration.

The SmartLab is one of conventional instruments for powder and thin film materials. But, it is possible to perform special measurement such a USAXS.