

POWDER X-RAY DIFFRACTOMETER WITH EASILY MOUNT/DISMOUNTABLE $K\alpha_1$ OPTICS UNIT

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X-ray diffractometer equipped with a Johansson Ge monochromator crystal is possible to obtain high resolution powder diffraction data by $K\alpha_1$ X-ray. Using $K\alpha_1$ X-ray, peak positions, widths and intensities will be determined more precisely than conventional system by $K\alpha$. The diffraction data by $K\alpha_1$ X-rays is recommended to be used for indexing or *ab initio* structure analysis, which requires high-resolution X-ray diffraction data. We propose a unique $K\alpha_1$ optics by Johansson Ge monochromator crystal for incident X-rays. Rigaku SmartLab system can install three kinds of optics such as parabolic multilayer mirror for parallel-beam optics (CBO), ellipsoidal multilayer mirror for convergent-beam optics (CBO-E), Johansson type monochromator crystal for incident $K\alpha_1$ X-rays ($K\alpha_1$ system). The optics with the combination of CBO and $K\alpha_1$ system is optimum for the general-purpose X-ray diffractometer that the optics is featured by easily mount/dismountable for the purpose. In this presentation, we report outline of the optics on the Rigaku SmartLab system, high-resolution measurement results by the Bragg-Brentano optics and convergent-beam optics using both $CuK\alpha_1$ and $CoK\alpha_1$.