Application Note B-XRD1060

View on rigaku.com

B-XRD1060 - MiniFlex measurement of trace samples

Introduction

Powder X-ray diffractometers are used in many fields of industry and research, for substances ranging from inorganic materials such as ceramics and minerals, to pharmaceuticals and other organic materials. The MiniFlex Series is a line of benchtop instruments—with 1/20 the volume, and 1/10 the weight, of stand-alone powder X-ray diffractometers—that can operate with power from an AC 100 V outlet. The current models in the MiniFlex Series include a high-power model type with a maximum rated output of 600 W (MiniFlex 600), and a reduced-utility model, which requires no water facilities and only generates 300 W of output power (MiniFlex 300).

Measurements and results

Figure 1 shows the X-ray diffraction pattern and qualitative analysis results obtained by measuring a sample in which corundum (weight 0.2 mg) was placed on a non-reflective sample plate. Intensity sufficient for conducting qualitative analysis was attained with a measurement time of 1 minute or less. Figure 2 shows the X-ray diffraction pattern for a trace amount of powder (weight 0.05 mg) obtained from a pill of Theodur, a type of medication for preventing asthma attacks. The qualitative analysis results confirmed the presence of anhydrous theophylline (the active ingredient) and lactose (the excipient). In this way, it is possible to quickly obtain the X-ray diffraction patterns necessary for identification, even with only a tiny amount of sample.

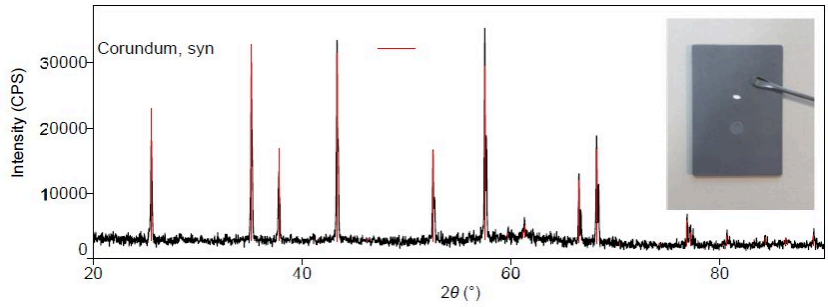

Figure 1: X-ray diffraction pattern and qualitative analysis results obtained from trace corundum

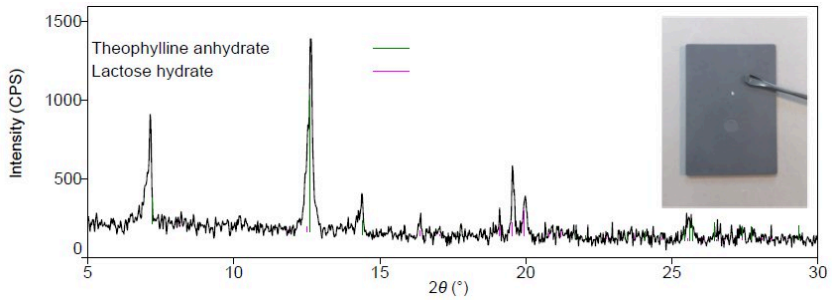

Figure 2: X-ray diffraction pattern and qualitative analysis obtained from a trace pharmaceutical

Related products

MiniFlex

New sixth-generation general purpose benchtop XRD syste
m for phase i.d and phase quantification