

# Letter to the Editor

## Comments on Schreiner and Jenkins and Schreiner

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Excellent earlier articles (Schreiner, 1986; Jenkins and Schreiner, 1986) provide a sound basis for operating any powder diffractometer. This comment describes three simple, but basic procedures worth emphasizing in the context of these earlier papers.

(1) A standard specimen should be thoroughly examined on every diffractometer after any alignment or disturbance, and then briefly reexamined, frequently in any routine laboratory, or before and after every set of experiments in a research laboratory. Silicon, silver and tungsten powders give good simple patterns while  $\text{As}_2\text{O}_3$  and  $\text{LaB}_6$  give convenient patterns with more lines. Quartz and  $\text{KBF}_4$  give patterns with closely spaced lines which are useful for judging resolution. It is most important that literature values for lattice parameters, and hence the theta-values, should not be

accepted until the parameters for that particular sample have been verified adequately. This is especially so for those phases prone to form solid solutions (quartz,  $\text{KBF}_4$ ).

(2) A low intensity and physiologically safe radioactive source of X-rays should be used for regular checks. This, when placed directly on the face of the counter, checks all components of the counting chain independently of other parts of the total system.

(3) A simple check of backlash, and later, wear is possible by placing any front-surfaced mirror (a microscope slide will do) in the specimen mount with the diffractometer set at any convenient angle in the area of most interest. Place a sharply defined light source in a fixed position so as to reflect onto a scale placed on the wall or ceiling (graph paper or a small ruler will do) a few meters away. By resetting to the same angle, quickly and slowly, from higher and lower angles, backlash and reproducibility, and later, wear can be established on an arbitrary scale. These can be checked in a few minutes on a routine basis if the light source and the scale are left in position.

Jenkins, R. and Schreiner, W. N. (1986). *Powder Diffraction*, 1, 305-319.  
Schreiner, W. N. (1986). *Powder Diffraction*, 1, 26-33.

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Ron Anderson, Editor

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