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Development of standard reference materials for powder diffraction

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The calibration and alignment of powder diffraction equipments can be performed by the measurement of standard samples. These samples must have well defined cell parameters. Besides, when using synchrotron radiation it is also necessary a precise determination of the wavelength, which is made using a standard sample. For determination of crystallite sizes and microstrains it is usual to determine the instrumental breadth of the diffractometers and, for this purpose, the standard sample must presents high crystallite size and low microstrains. In this work is presented a set of materials to be used as powder diffraction standards. These standards were characterized by diffraction (synchrotron and neutron) and compared to NIST standards. The results of both set of standards were compared and show that our standards samples fulfill the requirements to be used as diffraction standards and present quality similar to NIST standards.

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