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Combinatorial Screening with Nylon Loops for X-ray Powder Diffraction. Joseph Reibenspies, Nattamai Bhuvanesh, Chemistry, Texas A & M Univ., 3255 TAMU, College Station, TX 77845 USA.

A micro-quantity X-ray powder diffraction technique that employs nylon loops for combinatorial screening of polymorphs is described. The nylon loops are used to position the sample in a three-circle X-ray diffractometer in such a way as to allow for Gandolfi-like scans. These scans maximize mechanical tumbling of the sample, which in turn results in higher quality data. The diffractometer utilizes a pin-hole source and two-dimensional area detection for rapid data collection. The method can be readily automated by employing single-crystal screening procedures. The combinatorial analysis of the three known polymorphs of D-Mannitol is discussed and a simple procedure to produce all three polymorphs is presented.