

## Developing Advanced Databases for Total Pattern Analysis

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In the past decade, ICDD has transformed the Powder Diffraction File (PDF) from a database focused on the identification of crystalline materials into a database designed to identify and characterize a wide range of solid state materials. The database transformation was designed around the concepts of total pattern analysis, which is the use of *all* diffraction data in a pattern, so that materials can be identified and quantitated, states of matter studied, and crystallite size, crystallinity, and stress measured. A necessary step in the transformation was the conversion of the database into a vessel for data mining. Several steps had to be completed in the database content and design before software distributors could start to write code to assist users in automated, high throughput analyses.

The presentation will represent the work of staff members, editors, task groups, and users to transform the database for improved analyses, and new enabled capabilities. We will review the steps taken over the past decade, and discuss future developments.