

Abstract Submitted
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The total scattering atomic pair distribution function: New methodology for nanostructure analysis. AHMAD MASADEH, Department of Physics , The University of Jordan — The conventional xray diffraction (XRD) methods probe for the presence of long-range order (periodic structure) which are reflected in the Bragg peaks. Local structural deviations or disorder mainly affect the diffuse scattering intensity. In order to obtain structural information about both long-range order and local structure disorder, a technique that takes in account both Bragg and diffuse scattering need to be employed, such as the atomic pair distribution function (PDF) technique. This work introduces a PDF based methodology to quantitatively investigate nanostructure materials in general. The introduced methodology can be applied to extract quantitatively structural information about structure, crystallinity level, core/shell size, nanoparticle size, and inhomogeneous internal strain in the measured nanoparticles. This method is generally applicable to the characterization of the nano-scale solid, many of which may exhibit complex disorder and strain [1,2] (1) [Ahmad. S. Masadeh](#), et al.. Phys. Rev. B 76, 115413 (2007). (2) Xiaohao Yang, [Ahmad S Masadeh](#), Physical Chemistry Chemical Physics ; 15, 8480 (2013).

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