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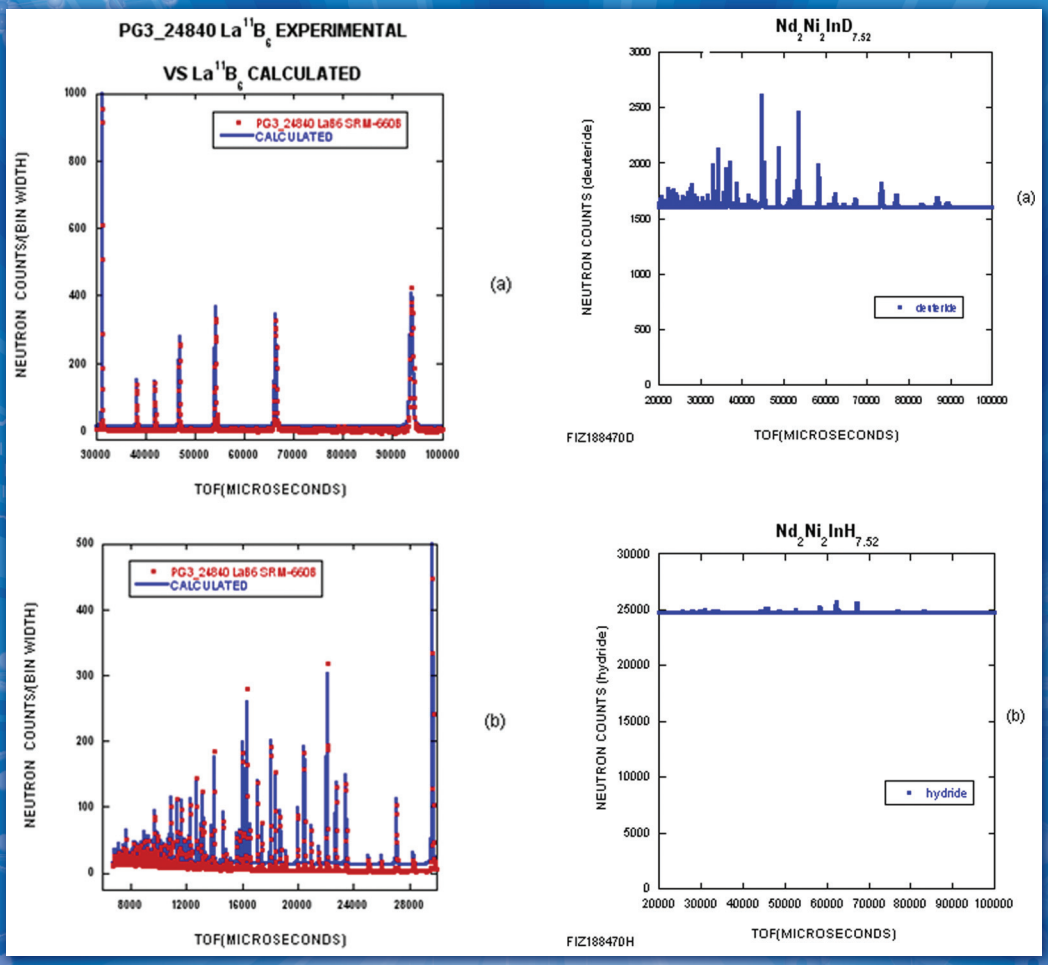

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CAMBRIDGE UNIVERSITY PRESS

Volume 32 / Number 04 / December 2017

Published online by Cambridge University Press

https://doi.org/10.1017/S0885715617001178 Published online by Cambridge University Press

Powder Diffraction
An International Journal of Materials Characterization

Volume 32 Number 4 December 2017

CODEN: PODIE2
ISSN: 0885-7156

EDITORIAL

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https://doi.org/10.1017/S0885715617001178 Published online by Cambridge University Press

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Powder Diffraction

An International Journal of Materials Characterization

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Powder Diffraction (ISSN: 0885-7156) is published quarterly (4X annually) by the JCPDS-International Centre for Diffraction Data through One Liberty Plaza, 20th floor New York, NY 10006-1435. POSTMASTER: Send address changes to *Powder Diffraction*, One Liberty Plaza, 20th floor New York, NY 10006-1435, USA. Periodicals postage paid in New York, NY and additional mailing offices.

On the Cover: Neutron powder diffraction has long been a powerful tool for characterization of crystalline materials due to several factors including that the neutron scattering factor changes from element to element leading to enhanced sensitivity to light elements, neighboring elements and isotopes as well as the reduced drop off in intensity with increasing Q. Neutron powder diffraction is now more widely available due to the construction of several powerful spallation neutron facilities around the world. In this ***PDJ*** issue the paper "Calculation of Full-Pattern Neutron Time-of-Flight (TOF) Powder Diffraction Patterns", by John Faber, shows that the recent release of the Powder Diffraction File (PDF4+) now includes capabilities to calculate the neutron powder pattern including the estimated background. The left box shows the calculation of the pattern with background for $La^{11}B_6$ (SRM660b) where approximately thirty diffraction lines are clearly seen. The right box shows the impact of inelastic scattering contributing to the background by comparing to the patterns for a deuterated and hydrogenated samples $Nd_2Ni_2InD_{7.52}$ and $Nd_2Ni_2InH_{7.52}$.

These tools will assist scientists in planning experiments at neutron sources as well as interpreting data collected. In addition, it is now possible to create a Search/Match database of nearly 300,000 inorganic phases for a given neutron instrument. With this, scientists using neutron facilities can now rapidly analyze mixtures of phases.

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