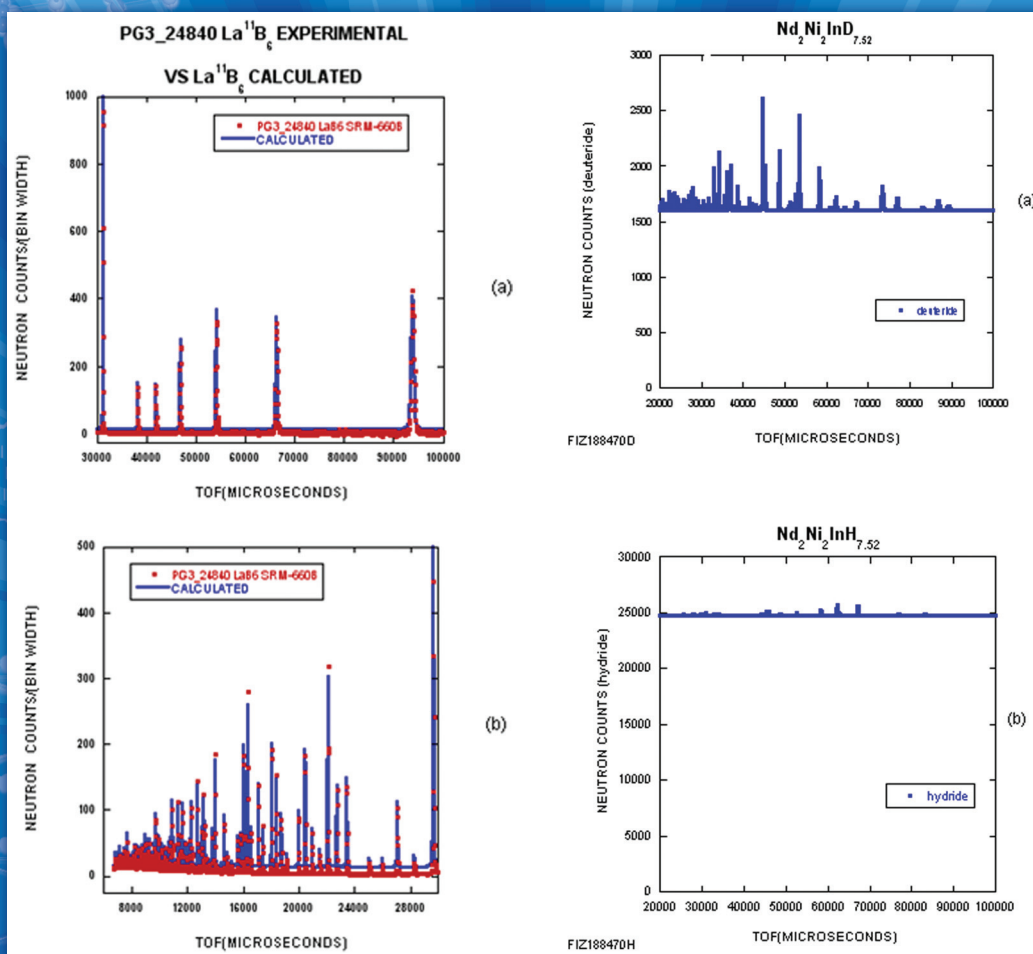


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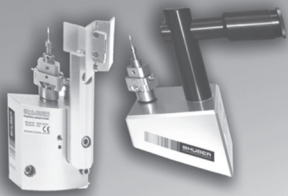
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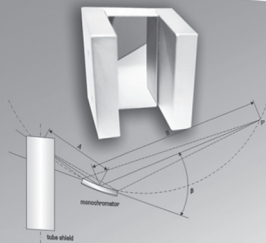


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EDITORIAL

- Camden Hubbard Neutron powder diffraction advances 221

TECHNICAL ARTICLES

- James A. Kaduk, Artem O. Dmitrienko, Amy M. Gindhart and Thomas N. Blanton Crystal structure of paliperidone palmitate (INVEGA SUSTENNA[®]), C₃₉H₅₇FN₄O₄ 222
- J. Faber Calculation of full-pattern neutron time-of-flight (TOF) powder diffraction patterns 228
- K. AlHamdan, W. Wong-Ng, J. Anike and J. A. Kaduk X-ray diffraction study of distorted perovskites $R(\text{Co}_{3/4}\text{Ti}_{1/4})\text{O}_3$ ($R = \text{La, Pr, Nd, Sm, Eu, Gd, Dy, Ho}$) 237
- F. Laufek, A. Vymazalová and M. Drábek Powder diffraction study of Pd₂HgSe₃ 244
- J. P. Han and Y. Q. Guo Structure stability and magnetic properties of $R\text{In}_{3-x}\text{T}_x$ ($R = \text{Gd, Pr, T} = \text{Co, Fe, Mn}$) 249

NEW DIFFRACTION DATA

- Irina Yu. Kotova, Aleksandra A. Savina and Elena G. Khaikina Crystal structure of new triple molybdate AgMg₃Ga(MoO₄)₅ from Rietveld refinement 255
- Tao Wu, Peter Y. Zavalij and Michael R. Zachariah Crystal structure of a new polymorph of iodic acid, $\delta\text{-HIO}_3$, from powder diffraction 261
- J. Maixner, B. Jurásek, M. Himl, M. Kuchař and M. Babor X-ray powder diffraction data for methoxetamine hydrochloride, C₁₅H₂₂ClNO₂ 265
- J. Maixner and P. Kačer X-ray powder diffraction data for acetamidinium formate C₃H₈N₂O₂, elimination of preferred orientation effect 268
- Gülsüm Gündoğdu, Sevim Peri Aytaç, Melanie Müller, Birsen Tozkoparan and Filiz Betül Kaynak Structure elucidation of 3-[1-(6-methoxy-2-naphthyl)ethyl]-6-(2,4-dichlorophenyl)-7H-1,2,4-triazolo[3,4-*b*]-1,3,4-thiadiazine, C₂₃H₁₈Cl₂N₄OS from synchrotron X-ray powder diffraction 271
- Gülsüm Gündoğdu, Sevim Peri Aytaç, Melanie Müller, Birsen Tozkoparan and Filiz Betül Kaynak Structure determination of two structural analogs, named 3-[1-(2-fluoro-4-biphenyl)ethyl]-6-(4-fluorophenyl)-1,2,4-triazolo[3,4-*b*]-1,3,4-thiadiazole (C₂₃H₁₆F₂N₄S) and 3-[1-(2-fluoro-4-biphenyl)ethyl]-6-(4-chlorophenyl)-1,2,4-triazolo[3,4-*b*]-1,3,4-thiadiazole (C₂₃H₁₆ClFN₄S) by synchrotron X-ray powder diffraction 279

DATA REPORT

- Jose H. Quintana Mendoza, J. A. Henao, Andrea P. Aparicio and Arnold R. Romero Bohorquez X-ray powder diffraction data and characterization of Mirabegron 290

INTERNATIONAL REPORTS

Denise Zulli	2017 Denver X-ray Conference (DXC)	295
Howie Joress and Ernest Fontes	The 2017 CHESS Annual User Meeting	297

CALENDARS

Gang Wang	Calendar of Forthcoming Meetings	299
Gang Wang	Calendar of Short Courses & Workshops	300

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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 $\text{Nd}_2\text{Ni}_2\text{InD}_{7.52}$ and $\text{Nd}_2\text{Ni}_2\text{InH}_{7.52}$.

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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