

# **Dr. Paris W. Barnes**

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## **Education**

*June 1998 – Sept. 2003*

The Ohio State University – Columbus, Ohio  
Ph.D. – Inorganic Chemistry  
Dissertation – “Exploring Structural Changes and Distortions in Quaternary Perovskites and Defect Pyrochlores Using Powder Diffraction Techniques”

*Aug. 1993 – May 1998*

Morehead State University – Morehead, Kentucky  
B.S. – Chemistry (Minor – Biology)

## **Professional Experience**

*Aug. 2006 – Present*

Millikin University – Decatur, IL  
Assistant Professor of Inorganic Chemistry, Chemistry Department

*Sept. 2003 – July 2006*

Argonne National Laboratory – Argonne, Illinois  
Postdoctoral Research Appointee, Materials Science Division  
Supervisor – James D. Jorgensen

*June 1998 – Sept. 2003*

The Ohio State University – Columbus, Ohio  
Research and Teaching Assistant, Department of Chemistry  
Advisor – Patrick M. Woodward

## **Professional Activities and Service**

*August 2005*

Neutron Powder Diffraction Workshop Lecturer and Instructor – National School on Neutron and X-ray Scattering (NXRS) at Argonne National Laboratory.

*March 2005*

Workshop on Multi-Anvil Techniques (Participation) – COMPRES and GSECARS supported; Advanced Photon Source, Argonne National Laboratory.

*August 2004*

Neutron Powder Diffraction Workshop Instructor – National School on Neutron and X-ray Scattering (NXRS) at Argonne National Laboratory.

May 2001

Linear Muffin Tin Orbital Approximation Workshop (Participation). 84<sup>th</sup> Canadian Society of Chemistry, Meeting – Montreal, Quebec, Canada.

## **Presentations**

Poster Presentation – “*Understanding Octahedral Tilting Distortions in  $A_2M^{3+}M^{5+}O_6$  Perovskites ( $M^{5+} = Ta, Nb, Sb$ ).*” American Conference on Neutron Scattering, College Park, Maryland (2004).

Oral Presentation – “*Pressure-Induced Volume Expansion (PIE) and Cation Migration in the Defect Pyrochlores  $ANbWO_6$ .*” Edward F. Hayes Graduate Research Forum, The Ohio State University, Columbus, Ohio (2003).

Poster Presentation – “*Exploring Octahedral Tilting Distortions in  $A_2MM'O_6$  Variably Ordered Double Perovskites Using Neutron Powder Diffraction.*” Midwest High Temperature and Solid State Chemistry Conference, East Lansing, Michigan (2003).

Oral and Poster Presentation – “*Pressure-Induced Cation Migration and Volume Expansion in the Defect Pyrochlores  $ANbWO_6$  ( $A = NH_4^+, Rb^+, H^+, K^+$ ).*” Materials Research Society, Boston, Massachusetts (2002).

Oral Presentation – “*Pressure-Induced Cation Migration and Volume Expansion in the Defect Pyrochlores  $ANbWO_6$  ( $A = NH_4^+, Rb^+, H^+, K^+$ ).*” Ohio Inorganic Weekend, Toledo, Ohio (2002).

Poster Presentation – “*Pressure-Induced Volume Expansion in the Defect Pyrochlores  $ANbWO_6$  ( $A=NH_4^+, H^+$ ).*” Ohio Inorganic Weekend, Athens, Ohio (2001).

Poster Presentation – “*Powder Diffraction Analysis of  $Sr_2AlTaO_6$ ,  $Sr_{2-x}Al_{1-x}Ta_{1+x}O_6$ , and  $Sr_2Al_{1+x}Ta_{1-x}O_{6-2x}F_{2x}$  ( $x=0.01-0.10$ ): An Attempt to Control the Anti-phase Boundary Concentration.*” American Crystallographic Society, Minneapolis-St. Paul, Minnesota (2000).

Poster Presentation – “*Powder Diffraction Analysis of  $Sr_2AlTaO_6$ ,  $Sr_{2-x}Al_{1-x}Ta_{1+x}O_6$ , and  $Sr_2Al_{1+x}Ta_{1-x}O_{6-2x}F_{2x}$  ( $x=0.01-0.10$ ): An Attempt to Control the Anti-phase Boundary Concentration.*” 32nd Regional American Chemical Society Meeting, Cincinnati, Ohio (2000).

## **Publications**

1. P. W. Barnes, M. W. Lufaso, and P. M. Woodward, “*Structure Determination of  $A_2M^{3+}TaO_6$  and  $A_2M^{3+}NbO_6$  Ordered Perovskites: Octahedral Tilting and Pseudosymmetry*”, *Acta Cryst.* **B62**, 384-396 (2006).
2. M. W. Lufaso, P. W. Barnes, and P. M. Woodward, “*Crystal Structure Prediction of Ordered Double Perovskites: SPuDS II*”, *Acta Cryst.* **B62**, 397-410 (2006).

3. J. D. Jorgensen, M. Avdeev, D. G. Hinks, P. W. Barnes and S. Short, "Thermal Expansion and Compressibility in Superconducting  $\text{Na}_x\text{CoO}_2 \cdot 4x\text{H}_2\text{O}$  ( $x \approx 1/3$ )", *Phys. Rev. B* **72**, 224515 (2005).
4. J. J. Neumeier, T. Tomita, M. Debossai, J. S. Schilling, P. W. Barnes, D. G. Hinks and J. D. Jorgensen, "Negative Thermal Expansion of  $\text{MgB}_2$  in the Superconducting State and Anomalous Behavior of the Bulk Gruneisen Function", *Phys. Rev. B* **72**, 220505 (2005).
5. P. W. Barnes, M. Avdeev, J. D. Jorgensen, D. G. Hinks, H. Claus, and S. Short, "Superconductivity and Cobalt Oxidation State in Metastable  $\text{Na}_x\text{CoO}_2 \cdot y\text{H}_2\text{O}$  ( $x \approx 1/3$ ;  $y \approx 4x$ )", *Phys. Rev. B* **72**, 134515 (2005).
6. B. Dabrowski, S. Kolesnik, O. Chmaissem, T. Maxwell, M. Avdeev, P. W. Barnes, and J. D. Jorgensen, "Increase of Ferromagnetic Ordering Temperature by the Minority-Band Double-Exchange Interaction in  $\text{SrRu}_{1-x}\text{Cr}_x\text{O}_3$ ", *Phys. Rev. B* **72**, 054428 (2005).
7. C. J. Howard, P. W. Barnes, B. J. Kennedy, and P. M. Woodward, "Structures of the Ordered Double Perovskites  $\text{Sr}_2\text{YTaO}_6$  and  $\text{Sr}_2\text{YNbO}_6$ ", *Acta Cryst. B* **61**, 258-262 (2005).
8. E. S. Bozin, V. Petkov, P. W. Barnes, P. M. Woodward, T. Vogt, S. D. Mahanti, and S. J. L. Billinge, "Temperature Dependent Total Scattering Structural Study of  $\text{CaCu}_3\text{Ti}_4\text{O}_{12}$ ", *J. Phys. Cond. Matter* **16**, S5091-S5102 (2004).
9. Y. Lee, D. B. Mitzi, P. W. Barnes, and T. Vogt. "Pressure-Induced Phase Transitions and Templating Effect in 3D Organic-Inorganic Hybrid Perovskites", *Phys. Rev. B* **68**, 020103 (2003).
10. H. W. Eng, P. W. Barnes, B. M. Auer, and P. M. Woodward, "Investigations of the Electronic Structure of  $d^0$  Transition Metal Oxides Belonging to the Perovskite Family", *J. Solid State Chem.* **175**, 94-109 (2003).
11. P. W. Barnes, P. M. Woodward, Y. Lee, T. Vogt, and J. A. Hrilijac, "Pressure-Induced Cation Migration and Volume Expansion in the Defect Pyrochlores  $\text{ANbWO}_6$  ( $A=\text{NH}_4^+, \text{Rb}^+, \text{H}^+, \text{K}^+$ )", *J. Am. Chem. Soc.* **125**, 4572-4579 (2003).
12. W. Si, E. M. Cruz, P. D. Johnson, P. W. Barnes, P. Woodward, and A. P. Ramirez, "Epitaxial Thin Films of the Giant-Dielectric-Constant Material  $\text{CaCu}_3\text{Ti}_4\text{O}_{12}$  Grown by Pulsed-Laser Deposition", *Appl. Phys. Lett.* **81**, 2056-2058 (2002).