

# CURRICULUM VITAE

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## Objective

Inorganic and Materials Chemistry faculty position

## Education

- 09/2006 – Present: Postdoctoral Research Associate, Northwestern University  
Advisor: Prof. Mercuri G. Kanatzidis
- 02/2004 – 09/2006: Postdoctoral Research Associate, Michigan State University  
Advisor: Prof. Mercuri G. Kanatzidis
- Ph.D., 01/2004 Inorganic Solid-State Chemistry, Crystal Chemistry  
(Minor: Materials Engineering)  
Technical University of Dresden, Germany  
Dissertation: “*Quaternary Silver Bismuth Chalcogenide Halides  
Ag – Bi – Q – X, (Q = S, Se; X = Cl, Br) Syntheses and Crystal  
Structures*”  
Advisor: Prof. Dr. Michael Ruck
- D.E.A., 1999 Inorganic Chemistry and Materials Chemistry  
University of Yaoundé-I, Cameroon
- M.S., 1998 Inorganic Chemistry, University of Yaoundé-I, Cameroon  
Advisor: Prof. Jacques Kamsu Kom
- B.S., 1996 Chemistry, University of Yaoundé-I, Cameroon

## Employment

**09/2006 – Present:** Postdoctoral Research Associate, Northwestern University, Evanston, with Prof. Mercuri G. Kanatzidis

### Projects

#### *Materials chemistry*

##### **“PbTe-based materials for high temperature thermoelectric energy conversion”**

- Optimization of the thermoelectric properties of the n-type  $K_{1-x}Pb_{m+y}Sb_{1+z}Te_{m+2}$  materials
- Thermoelectric properties of the nanostructured PbTe + x% Eu n-type materials

#### *Solid state chemistry*

- Synthesis, crystal structure determination and physical properties of intermetallic compounds in the ternary W – Ge – In system

**02/2004 – 09/2006:** Postdoctoral Research Associate, Michigan State University, East-Lansing, with Prof. Mercuri G. Kanatzidis

### Projects

#### *Materials chemistry*

##### **“PbTe-based materials for high temperature thermoelectric energy conversion”**

- Optimization of the thermoelectric properties of the p-type  $Na_{1-x}Pb_mSb_yTe_{m+2}$  materials,
- Thermoelectric properties of nanostructured  $Pb_{9,6}Sb_yTe_{10-x}Se_x$  materials

#### *Solid state chemistry*

- Composition – structure – property relationships in the homologous series  $(Sb_2)_n(Sb_2Te_3)_m$

**10/2000 – 02/2004** Research and Teaching Assistant, Technical University of Dresden, Germany.

### Dissertation research project

*“Quaternary Silver Bismuth Chalcogenide Halides Ag – Bi – Q – X, (Q = S, Se; X = Cl, Br: Syntheses and Crystal Structures”*

**10/1997 – 08/2000** Teaching Assistant, University of Yaoundé- I, Cameroon

### **Research Interests**

- High temperature synthesis, structure determination
- Materials for advanced energy conversion
- Transport, magnetic and thermochemical properties
- Quaternary transition metal – chalcogenides
- Quaternary mixed anion transition metal chalcogenide – halides
- Quaternary intermetallic transition metal – pnictides
- Structure prediction through phase homology
- Structure – composition – properties relationships
- Electronic band structure

### **Teaching Interests**

- General Chemistry,
- Inorganic Materials Chemistry,
- Fundamentals of Crystallography,
- Solid State Chemistry and Its Applications

### **Society Memberships and Service**

- American Chemical Society
- Materials Research Society
- Reviewer for Journal of Solid State Chemistry (JSSC)

### **Languages (Reading, Writing, Speaking)**

- **English** (Fluent, Fluent, Fluent)
- **French** (Fluent, Fluent, Fluent)
- **German** (Intermediate, Basic, Basic)

## Publications

- 1 **P. F. P. Poudeu**, H. Kong, R. Pcionek, X. Shi, C. Uher, M. G. Kanatzidis: Nanostructured PbTe: Reactive displacement of Pb atoms by Eu. *Abstracts of Papers, 233rd ACS National Meeting 2007* Chicago, IL, United States, March 25-29, 2007.
- 2 **P. F. P. Poudeu**, J. D'Angelo, H. Kong, A. Downey, J. L. Short, R. Pcionek, T. P. Hogan, C. Uher, M. G. Kanatzidis: Nanostructures versus Solid Solutions: Low Lattice Thermal Conductivity and Enhanced Thermoelectric Figure of Merit in  $\text{Pb}_{9.6}\text{Sb}_{0.2}\text{Te}_{10-x}\text{Se}_x$  Bulk Materials, *J. Am. Chem. Soc.* **2006**, *128*, 14347 – 14355.
- 3 **P. F. P. Poudeu**, M. Ruck: The Intergrowth Structure of  $\text{Ag}_{1.2}\text{Bi}_{17.6}\text{S}_{23}\text{Cl}_8$  and its Relation to the Tubular Structure of  $\text{Bi}_{6+8}\text{S}_{6+38}\text{Cl}_{6-38}$  and the Pavonite Homologue  $\text{Ag}_{3x}\text{Bi}_{5-3x}\text{S}_{8-6x}\text{Cl}_{6x-1}$ , *J. Solid State Chem.* **2006**, *179*, 3640 – 3648.
- 4 M. M. Bélombé, J. Nenwa, A. L. Kammoe, **P. F. P. Poudeu**: Hydronium tris(oxamide dioxime- $\kappa^2\text{N,N}$ )nickel(II) triiodide, *Acta Cryst.* **2006**, *E62*, m2583 – m2585.
- 5 **P. F. P. Poudeu**, J. D'Angelo, A. D. Downey, J. L. Short, T. P. Hogan, M. G. Kanatzidis: High Thermoelectric Figure of Merit and Nanostructuring in Bulk p-type  $\text{Na}_{1-x}\text{Pb}_m\text{Sb}_y\text{Te}_{m+2}$ , *Angew. Chem., Int. Ed.* **2006**, *45*, 3835 – 3839.
- 6 **P. F. P. Poudeu**, J. D'Angelo, A. Downey, J. Soosmann, R. Pcionek, Z. Zhou, O. Palchik, T. P. Hogan, C. Uher and M. G. Kanatzidis: Effects of antimony on the thermoelectric properties of the cubic  $\text{Pb}_{9.6}\text{Sb}_y\text{Te}_{10-x}\text{Se}_x$  materials, *Mater. Res. Soc. Symp. Proc.* **2006**, *886*, F05-09.1 – 6.
- 7 A. D. Downey, T. P. Hogan, E. Quarez, **P. F. P. Poudeu**, M. G. Kanatzidis, Ed. Timm and H. Schock: Application of transmission line theory for modeling of a thermoelectric module in multiple configurations for AC electrical measurements, *Mater. Res. Soc. Symp. Proc.* **2006**, *886*, F10-07.1 – 6.
- 8 T. P. Hogan, A. D. Downey, J. L. Short, J. J. D'Angelo, E. Quarez, **P. F. P. Poudeu**, J. Androulakis, Ed. Timm, K. A. Sarbo, H. J. Schock, Tom Shih and M. G. Kanatzidis: Progress on the Fabrication and Characterization of High Efficiency Thermoelectric Generators, *Mater. Res. Soc. Symp. Proc.* **2006**, *886*, F12-04.1 – 6.

- 9 **P. F. P. Poudeu** and M. Ruck:  $\text{Ag}_{3.5}\text{Bi}_{7.5}\text{S}_{13}$ , a new member of the homologous series  $[\text{Bi}_2\text{S}_3]_2 \cdot [\text{AgBiS}_2]_{(N-1)/2}$  with  $N = 8$ , *Acta Cryst.* **2005**, *C61*, i41 – i43.
- 10 **P. F. P. Poudeu** and Mercuri G. Kanatzidis: Design in solid state chemistry based on phase homologies.  $\text{Sb}_4\text{Te}_3$  and  $\text{Sb}_8\text{Te}_9$  as new members of the series  $(\text{Sb}_2\text{Te}_3)_m \cdot (\text{Sb}_2)_n$ , *Chem. Commun.* **2005**, 2672.
- 11 **P. F. P. Poudeu**, T. Söhnel and M. Ruck: Homologous Silver Bismuth Chalcogenide Halides  $(\text{N}, \text{x})\text{P}$ . I. Syntheses and Crystal Structures of the  $(0,1)\text{P}$  Compound  $\text{AgBi}_2\text{S}_2\text{Cl}_3$  and Three Members of the  $(1, \text{x})\text{P}$  Solid Solution Series  $\text{Ag}_{2\text{x}}\text{Bi}_{4-2\text{x}}\text{S}_{6-4\text{x}}\text{Br}_{4\text{x}}$ , *Z. Anorg. Allg. Chem.* **2004**, *630*, 1276.
- 12 M. Ruck, **P. F. P. Poudeu** and T. Söhnel: Synthese, Kristallstruktur und elektronische Bandstruktur der isotypen Sulfidchloride  $\text{CuBiSCl}_2$  und  $\text{AgBiSCl}_2$ , *Z. Anorg. Allg. Chem.* **2004**, *630*, 63.
- 13 **P. F. P. Poudeu**, M. Ruck:  $\text{Ag}_{1.2}\text{Bi}_{17.6}\text{S}_{23}\text{Cl}_8$ , Novel Silver Bismuth Sulphide Chloride with Complex Coupling of  $\text{Bi}_4\text{S}_5\text{Cl}_2$  and  $\text{Ag}_3\text{Bi}_7\text{S}_{10}\text{Cl}_4$  Structure Motives, *Z. Kristallogr. Suppl.* **2003**, *20*, 147.
- 14 **P. F. P. Poudeu**, M. Ruck:  $[\text{BiSBr}]_2[\text{MZ}]_{N+1}$  Homologous Series: Two New Members with  $N = 5$  and  $7$ , *Z. Kristallogr. Suppl.* **2003**, *20*, 147.
- 15 **P. F. P. Poudeu**, M. Ruck: Syntheses and Crystal Structures of  $\text{AgBiSCl}_2$  and  $\text{AgBi}_2\text{S}_2\text{Cl}_3$ , *Z. Anorg. Allg. Chem.* **2002**, *628*, 2204
- 16 **P. F. P. Poudeu**, M. Ruck: On a Series of Pavonite Homologous Compounds in the System  $\text{Ag/Bi/S/Br}$ , *Z. Kristallogr. Suppl.* **2002**, *19*, 119

## Conferences

### Oral presentations

- 1 American Chemical Society 233rd National Meeting & Exposition March 25-29, 2007 Chicago, IL USA.  
**P. F. P. Poudeu**, H. Kong, R. Pcioneck, X. Shi, C. Uher and M. G. Kanatzidis: *Nanostructured PbTe. Reactive displacement of Pb by Eu*
- 2 Materials Research Society Fall Meeting, Symposium – F: Materials and Technologies for Direct Thermal – to – Electricity Energy Conversion. November 28 – December 2, 2005. Hynes Convention Center & Sheraton Boston Hotel, Boston, Massachusetts, USA.

- P. F. P. Poudeu**, J. D'Angelo, A. Downey, J. Soosmann, R. Pcionek, Z. Zhou, O. Palchik, T. P. Hogan, C. Uher and M. G. Kanatzidis: *Effects of antimony on the thermoelectric properties of the cubic  $Pb_{9,6}Sb_yTe_{10-x}Se_x$  materials*
- 3 Materials Research Society Fall Meeting, Symposium – F: Materials and Technologies for Direct Thermal – to – Electricity Energy Conversion. November 28 – December 2, 2005. Hynes Convention Center & Sheraton Boston Hotel, Boston, Massachusetts, USA.
- A. D. Downey, T. P. Hogan, E. Quarez, **P. F. P. Poudeu**, M. G. Kanatzidis, Ed. Timm and H. Schock: *Application of transmission line theory for modeling of a thermoelectric module in multiple configurations for AC electrical measurements*
- 4 Materials Research Society Fall Meeting, Symposium – F: Materials and Technologies for Direct Thermal – to – Electricity Energy Conversion. November 28 – December 2, 2005. Hynes Convention Center & Sheraton Boston Hotel, Boston, Massachusetts, USA.
- T. P. Hogan, A. D. Downey, J. L. Short, J. J. D'Angelo, E. Quarez, **P. F. P. Poudeu**, J. Androulakis, Ed. Timm, K. A. Sarbo, H. J. Schock, Tom Shih and M. G. Kanatzidis: *Progress on the Fabrication and Characterization of High Efficiency Thermoelectric Generators*
- 5 Midwest Solid-State Conference 2005, University of Notre Dame, May 26 – 28, 2005, Notre Dame, Indiana, USA.
- P. F. P. Poudeu** and M. G. Kanatzidis: *Design in solid state chemistry based on phase homologies.  $Sb_4Te_3$  and  $Sb_8Te_9$  as new members of the series  $(Sb_2Te_3)_m \cdot (Sb_2)_n$ .*
- 6 11<sup>th</sup> Jahrestagung der Deutschen Gesellschaft für Kristallographie (11<sup>th</sup> Annual conference of the German society for crystallography), March 2003, Berlin, Germany.
- P. F. P. Poudeu** and M. Ruck:  *$Ag_{1,2}Bi_{17,6}S_{23}Cl_8$ , Novel Silver Bismuth Sulphide Chloride with Complex Coupling of  $Bi_4S_5Cl_2$  and  $Ag_3Bi_7S_{10}Cl_4$  Structure.*

## Posters

1. Annual Review Meeting of the MURI Program, Michigan State University, June 2005, East Lansing, USA.

- P. F. P. Poudeu**, Jonathan D'Angelo, Adam Downey, Jarrod L. Short, Robert Pcionek, Timothy P. Hogan and Mercuri G. Kanatzidis: *High ZT p-type Sodium and Antimony doped PbTe;  $Na_{1-x}Pb_mSb_yTe_{m+2}$* .
2. Annual Review Meeting of the MURI Program, Michigan State University, June 2005, East Lansing, USA.  
**Pierre F. P. Poudeu**, Jonathan D'Angelo, Joseph R. Sootsmann, Zhenhua Zhou, Oleg Palchik, Timothy P. Hogan, Ctirad Uher and Mercuri G. Kanatzidis: *Thermoelectric properties of the cubic  $Pb_{9,6}Sb_yTe_{10-x}Se_x$  materials*
  3. Annual Review Meeting of the MURI Program, Michigan State University, September 2004, East Lansing, USA.  
A. Downey, S. Loo, J. L. Short, J. D'Angelo, M. Pajor, E. Quarez, K. F. Shu, **P. F. P. Poudeu**, S. M. Park, Ed. Timm, H. Schock, M. G. Kanatzidis and Tim Hogan: *Ultra High Temp (UHT) Thermoelectric Measuring System: 300 K – 900 K*.
  4. Annual Review Meeting of the MURI Program, Michigan State University, September 2004, East Lansing, USA.  
**P. F. P. Poudeu**, A. D. Downey, Tim Hogan and M. G. Kanatzidis: *Effects of K and Na on the Thermoelectric Properties of  $A_{1-x}Pb_mSb_yTe_{m+2}$  Compounds*.
  5. 9<sup>th</sup> European Conference on Solid State Chemistry, September 2003, Stuttgart, Germany.  
**P. F. P. Poudeu** and M. Ruck: *The crystal structure of  $Ag_{3.5}Bi_{7.5}S_{13}$  ( $^8P$ ) and its relation to the structures of  $^4P$ ,  $^5P$  and  $^7P$  pavonite homologues*.
  6. 11<sup>th</sup> Jahrestagung der Deutschen Gesellschaft für Kristallographie (11<sup>th</sup> Annual conference of the German society for crystallography), March 2003, Berlin, Germany.  
**P. F. P. Poudeu** and M. Ruck:  *$[BiSX]_2[MZ]_{(N+1)}$  Homologous Series: Two New Members with  $N = 5$  and 7*.
  7. 11<sup>th</sup> Jahrestagung der Deutschen Gesellschaft für Kristallographie (11<sup>th</sup> Annual conference of the German society for crystallography), March 2003, Berlin, Germany.  
**P. F. P. Poudeu** and M. Ruck:  *$Ag_{1.2}Bi_{17.6}S_{23}Cl_8$ , Novel Silver Bismuth Sulphide Chloride with Complex Coupling of  $Bi_4S_5Cl_2$  and  $Ag_3Bi_7S_{10}Cl_4$  Structure Motives*.

8. 11<sup>th</sup> Vortragstagung der Fachgruppe Festkörperchemie und Materialforschung der GDCh (Gesellschaft Deutsche Chemiker) (*11<sup>th</sup> Conference of lectures of the subgroup solid state chemistry and materials research of the GDCh (German society of chemists)*), September 2002, Dresden, Germany.  
**P. F. P. Poudeu** and M. Ruck: *Syntheses and crystal structures of  $\text{AgBiSCl}_2$  and  $\text{AgBi}_2\text{S}_2\text{Cl}_3$ .*
9. 10<sup>th</sup> Jahrestagung der Deutschen Gesellschaft für Kristallographie (*10<sup>th</sup> Annual conference of the German society for crystallography*), March 2002 Kiel, Germany.  
**P. F. P. Poudeu** and M. Ruck: *On a series of pavonite homologous compounds in the system  $\text{Ag/Bi/S/Br}$ .*



## References

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