



Dr Christophe TENAILLEAU

Né le 11 mars 1972



Laboratoire CIRIMAT
UMR CNRS 5085
Université Paul Sabatier
118, Route de Narbonne
31062 TOULOUSE Cedex 9

Tél. : 05 61 55 81 03
Fax : 05 61 55 61 63
E-mail : tenailleau@chimie.ups-tlse.fr

DIPLÔMES ET FORMATION

2001 : Doctorat de « Chimie de l'Etat Solide » sous la direction du Docteur Philippe Lacorre au Laboratoire des Fluorures du Mans : « Synthèse et caractérisation d'oxydes de vanadium et molybdène à transition Métal/Isolant ».

1997 : Diplôme d'Etudes Approfondies (D.E.A.) de « Chimie Avancée de l'Etat Solide » obtenu avec Mention à l'Institut des Matériaux Jean Rouxel de Nantes.

1992-1996 : Diplômes Universitaires (Faculté des Sciences et Techniques de Nantes).
Deug A, Licence et Maîtrise ès Sciences Physiques

1991 : Baccalauréat série C au Lycée Pierre Mendès France de La Roche sur Yon.

EXPERIENCE PROFESSIONNELLE

Depuis Septembre 2006 : Maître de Conférences au Laboratoire CIRIMAT/LCMIE de Toulouse, Université Paul Sabatier. **Spécialités : Synthèse et caractérisation structurale, en relation avec l'étude des propriétés physiques, de (nano)matériaux à base d'oxydes en vue d'applications dans divers domaines de l'Energie (Electronique et Solaire, essentiellement).**

2005-2006 : Associé de Recherche du CNRS au Laboratoire CRISMAT de Caen dans l'équipe de la Professeur Maryvonne Hervieu : « Phosphates acides d'éléments de transition: synthèse et caractérisation de nouveaux conducteurs protoniques basse température ».

2004-2005 : Associé de Recherche au Département des Sciences du Musée d'Australie du Sud à Adélaïde sous la direction du Professeur Allan Pring : « Fe/Ni ordering in sulfide minerals ».

2002-2003 : Associé de Recherche à l'Université de Liverpool, U.K., sous la direction du Professeur Matthew Rosseinsky : « Cation site and charge ordering in complex perovskite superstructures produced by a simple modular synthetic approach ».

1998-2001 : Travaux de Recherche portant sur la synthèse et les caractérisations structurale, électrique et magnétique de nouveaux oxydes de métaux 3d et 4d à transition Métal/Isolant.

1999-2001 : Enseignements à l'I.U.T. de Chimie du Mans (152 heures équivalent TD).

Aout 1997 - Mai 1998 : Scientifique du Contingent au Laboratoire d'Etudes Médico-Physiologiques de la base aérienne de Mont de Marsan. Analyse de gaz aéronautiques par méthode Infra-Rouge à Transformée de Fourier.

Sep. 1996 - Juin 1997 : Stages de D.E.A. à l'Institut des Matériaux Jean Rouxel de Nantes.

- Synthèse et caractérisation de matériaux mésostructurés dans le système silicate/eau/tensioactif.
- Etude sur la formation de magnétite dans les dents de chiton.

Maître de Conférences (depuis Sept. 2006)

Laboratoire CIRIMAT - Université Paul Sabatier - Toulouse

Responsabilités Pédagogiques :

- 2007/08, 2011/12 : Présidences de jury de Baccalauréat (Lycées : International de Colomiers, De Rodat et Fermat de Toulouse)
- 2008 : Participation aux journées d'informations sur les Sciences et la Recherche auprès des enseignants du secondaire.
- 2008 : Membre de la commission de spécialistes en section 33 INP pour postes de MCF
- 2009 : Membre de la commission de spécialistes en sections 31 et 33 UPS pour postes d'ATER
- 2008, 2010/13 : Tuteur universitaire de stages en entreprise pour Master 2 Pro PPC
- 2010/... : Tuteur universitaire de stages en laboratoire et/ou en entreprise pour Licence Pro Matériaux
- 2010/... : Encadrant de stages au laboratoire CIRIMAT pour Master 1 Matériaux
- **2011/2015 : Responsable de la Spécialité Chimie des Matériaux (S6) de L3 Chimie**
- 2012 & 2014 : Encadrant de stages (6 mois) au laboratoire CIRIMAT pour Master 2 Recherche Matériaux de l'UPS & Renewable Energies de l'USTH
- 2012/... : Responsable de l'UE 11 « Matériaux pour l'Electronique » (S8) en Master 1 Matériaux
- 2012/... : Responsable de l'UE 4 « Chimie et Matériaux » en M1 et de l'UE 3 « Stockage d'Energie » en M2 du Master « Renewable Energies » de l'Université de Sciences et Technologie à Hanoi (USTH)
- **2013/... : Coordinateur Erasmus/Mundus « Chimie des Matériaux » et « Procédés Physico-Chimiques » de l'Université Paul Sabatier (UPS)**
- **2013/... : Membre du collège scientifique de Chimie à l'UPS**
- **2015/... : Coordinateur du Coursus Master Ingénierie « Sciences et génie des matériaux » de l'UPS**

Enseignements en TP, TD et CM (en moyenne ~200h éq.TD/an depuis l'affectation en Septembre 2006) de Chimie Inorganique et Minérale, Chimie du Solide, Sciences des Matériaux aux 3 niveaux de la Licence (Chimie, Physique) et 2 niveaux de Masters (M1 Matériaux et M2 Pro Procédés Physico-Chimiques)

Responsabilités liées à la Recherche Scientifique :

- Encadrant de Thèses et *Post-docs* :
- * Mise en forme de couches minces d'oxydes pour le photovoltaïque, Ly Le, 2013/
- * Synthèse et caractérisation d'oxydes métamatériaux, C. Dupas, 2012/
- * Diffusion de l'oxygène dans BaTiO₃ pour l'électronique de puissance, S. Dupuis, 2012/
- * Multicouches de nanothermites à base de CuO/Al, M. Bahrami 2011/13
- * Préparation de films minces d'oxydes absorbants de lumière, G. Salek, 2011/13 (+ Jury de Thèse)
- * Diélectrique à permittivité colossale à base de BaTiO₃, C. Voisin, 2010/13 (+ Jury de Thèse)
- * *Thermistances CTN à base de Mn_{3-x}Co_xO₄*, A. Lecoindre, 2011/12
- * Nanomatériaux énergétiques à base de CuO/Al, M. Petrantoni, 2008/10 (+ Jury de Thèse)
- * Poudres et céramiques de thermistances CTN à base de Mn_{3-x}Co_xO₄, H. Bordeneuve, 2007/09
- **2009/... : Responsable de la thématique 'Energie et Matériaux' de la Fédération de recherche FERMaT (FR3089) et depuis 2012 co-responsable de la thématique « Matériaux et Applications »**
- 2009/... : Membre du Service de Prévention et Sécurité (PCR) au CIRIMAT/UPS
- **2010/... : Responsable du Tomographe et Diffractomètre/reflectomètre RX de FERMaT**
- 2011/... : Représentant du CIRIMAT dans le projet 3DPHI concernant l'intégration hybride des systèmes de l'électronique de puissance
- 2011/... : Représentant du CIRIMAT et de l'INPT dans PRIMES (Pôle de Recherche sur l'Intégration de puissance et le Management de l'Energie et de ses composants de Stockage)
- 2011/... : Représentant de l'équipe OVM pour l'utilisation de la plate-forme de frittage flash (SPS) du MHT à Toulouse
- **2013/... : Membre élu du conseil de l'UMR CIRIMAT**
- **2016/2020 : Directeur adjoint de la Fédération de recherche FERMaT**

Dr Christophe TENAILLEAU

D.O.B.: March, 11th 1972

Institut Carnot CIRIMAT – UMR CNRS 5085
Université Paul Sabatier
118, Route de Narbonne – 31062 Toulouse Cedex 9 – FRANCE

Phone: +33 (0) 5 6155 6283
Fax: +33 (0) 5 6155 6163
E-mail : tenailleau@chimie.ups-tlse.fr

EDUCATION AND QUALIFICATIONS

2001: PhD in « Solid State Chemistry » at the French laboratory of Oxides and Fluorides in Le Mans.
« *Synthesis and characterisation of vanadium and molybdenum oxides with Metal/Insulator transition* ».

1997: Master degree in « Advanced Solid State Chemistry » with distinction at the “Institut des Matériaux Jean Rouxel” in Nantes, France.

1992-1996: Academic qualifications BSc in Physics and Chemistry (Sciences University of Nantes, France).

1991: High School diploma in Mathematics, Physics and Chemistry in La Roche sur Yon, France.

WORK EXPERIENCE

Since Sept. 2006: Associate Professor at the CIRIMAT/LCMIE laboratory, Paul Sabatier University, Toulouse, France. Synthesis and structural characterisations of oxide (nano)materials, in relation with physical properties, for various energy source applications (dielectrics, solar cells, electronics...).

Oct. 2005 – Aug. 2006: Research Scientist for CNRS, CRISMAT laboratory, Caen, France.
« *Acid phosphates of transition metals: synthesis and characterisation of new low temperature proton conductors* ». Research role involved the preparation and characterisation of new phosphate materials, followed by electrochemical studies and ionic conduction measurements.

Sept. 2003 – Sept. 2005: Research Scientist at the South Australian Museum, Adelaide, South Australia.
« *Fe/Ni ordering in sulfide minerals* ». Research work was essentially based on the study of formation, cationic ordering and phase transitions of minerals and synthetic materials of iron/nickel sulfides.

Jan. 2002 – Sept. 2003: Post-doctoral position at the University of Liverpool, UK. « *Cation site and charge ordering in complex perovskite superstructures produced by a simple modular synthetic approach* ». Research experience in the preparation of complex oxides by design, whose new structural and physical properties were investigated by various techniques.

1998-2001: Research experience in the synthesis and structural, electrical and magnetic property studies of vanadium and molybdenum oxides with the Mott transition-type.

1999-2001: Tutor in “Mineral Chemistry” (graduate level) during my PhD.

Aug. 1997 – May 1998: Military duties as a scientist at the aerial site of Mont de Marsan, France.
Samples management and analysis of aeronautic gas by FT-IR spectroscopy.

Sept. 1996 - June 1997: Research experience at the Institut des matériaux in Nantes, France.

- Synthesis and characterisation of mesostructured crystals in silicate/water/surfactant systems.
- Magnetite formation in chitin's teeth.

SKILLS

(Master, PhD and post-docs)

- **Extensive experience in synthetic solid state chemistry**

I have synthesised several oxide, phosphate and sulfide transition metal based materials exhibiting very interesting physical properties. In doing so, I have acquired extensive experience in using various techniques, such as high frequency furnace under vacuum, solid state methods, synthesis in sealed platinum and/or silica tubes, synthesis under controlled atmospheres and under high pressure, sol-gel, water-bath and hydrothermal techniques...

- **Extensive experience in various characterisation techniques**

- **X-rays and Neutron diffraction**

Collection and analysis of powder X-rays and neutron data (from state of the art facilities including Daresbury and ISIS in the UK, ESRF, ILL and LLB in France, ANBF in Japan, BSRF-EXAFS- in China and HRPD and MRPD at ANSTO in Australia) by **Rietveld** refinement using Fullprof or GSAS software suits. Some refinements included treatment of multiple nuclear and magnetic phases by coupling the two sources of diffraction. I also have experience in structural determinations using *ab-initio* methods.

- **Analytical chemistry methods**

Various analytical chemistry experiments were undertaken for characterization, including thermogravimetric and differential thermal analysis (**TGA/TDA**) and mass spectrometry (**MS**). Also carried out specific heat measurements using differential scanning calorimetry (**DSC**).

- **Spectroscopic measurements**

Measured Electronic Paramagnetic Resonant (**EPR**) signals and Raman spectra (40-300 K) of various oxides. Analysed aeronautic gas by Infra-Red (**FT-IR**) spectrometry. Study of perovskite-derivative materials in the **medium** and **far Infrared** region.

- **Microscopy measurements**

Used Scanning Electron Microscopy (**SEM**), Transmission Electron Microscopy (**TEM**) and High Resolution Transmission Electron Microscopy (**HRTEM**).

- **Electrical transport property measurements**

Measured the **electrical resistivity** of various oxide materials in the presence of magnetic field (0-7 T) by the Quantum Design Physical Properties Measurement System (PPMS) and the linear-four probe method.

- **Magnetic property measurements**

Proficient at **AC susceptibility** and **DC magnetization** (2.8-300 K) measurements using the Quantum Design PPMS and Squid MPMS.

- **Mossbauer measurements**

Collaborated in sample preparations and collected measurements by Mossbauer spectrometry. Refined and analysed the data via the GIMP software.

• Technical experience

I acquired very good knowledge in the use of the SQUID, PPMS and MPMS instruments and in the fine adjustment of an X-ray diffractometer, the use of a four-circled instrument and the maintenance of a TGA/TDA system. I have optimised the experimental conditions of a high-frequencies furnace under vacuum and high-pressure system under O₂. I am proficient in the use of a Jeol 2000FX microscope. Also I have experience in working in glove boxes. I participated to the design and fully tested a new hydrothermal cell, unique in Australia, for in-situ neutron diffraction measurements.

I also had many responsibilities in testing and developing new instruments and experiments, analysing data, writing scientific papers and collaborating with a number of scientists. I have prepared many proposals, which resulted in the allocation of beam time at international and national facilities (ESRF, ILL, ANSTO, ISIS etc.).

• Teaching experience

While undertaking my PhD I had part-time teaching experience in « Mineral Chemistry » at the I.U.T. (“Institut Universitaire de Technologie” of University level) of Chemistry in Le Mans, France to first and second year chemistry students. During my teaching roles I have demonstrated preparations, titrations and characterisations of liquid and solid solution techniques. I also have supervised exams and corrected exam papers.

I gained supervisory experience while working within the Science Department of the SA Museum in which I was responsible for 2 students from Singapore for consecutive periods of 6 months. Each role consisted of introducing a safety course, general presentation of projects and organisation of experimental plan including synthetic procedure, data analysis and interpretation. I also edited students' reports and gave guidance in their final oral presentations.

• PhD Thesis

My PhD thesis is available freely online at: <http://www.univ-lemans.fr/sciences/fluorures/telechargement/Theses/TheseChristopheTenailleau2001.pdf>

• Post-doctoral experience

- The preparation and study of new complex oxides, containing at least 2 different cationic environments, was the objective of my postdoctoral position (7 Jan 2002 - 6 Sept 2003) undertaken in the Chemistry Department at the University of Liverpool under the supervision of Professor MJ Rosseinsky.

The structures of these new materials were based on the combination of perovskite and brownmillerite units. In parallel to standard solid-state techniques, citrate-gel synthetic methods were also utilised. I also optimised and tested a high oxygen pressure system that could also be used as another technique to prepare these materials.

During this postdoctoral role both powder and single crystal X-ray diffractions in both transmission and reflectance modes as well as electron microscopy was used in structural analysis. Rietveld refinements using powder diffraction data were undertaken essentially using GSAS software. Various programmes for *ab-initio* methods were also utilised as well as obtained from synchrotron facilities such as Daresbury in U.K.

Susceptibility and magnetisation measurements were collected on these new oxide materials using a Quantum Design MPMSXL-7 7T SQUID. Mossbauer spectrum was also collected systematically for each sample in order to determine the different iron environments and possible magnetic contribution. High resolution X-ray diffractometry measurements were undertaken at the ESRF, France (ID31 instrument) and neutron measurements at the ILL (D20 and D2B instruments) and have contributed to the structural determination of two new phases in the CaBaNdFeO system with a 3-layer perovskite type (close to the $\text{Sr}_2\text{LaFe}_3\text{O}_8$ phase with cationic order) and a 10-layer perovskite type (similar to $\text{Ca}_5\text{YFe}_6\text{O}_{13}$ but having in our case the transition metal in three different environments). These new phases also exhibit very interesting magnetic and multiferroic properties (see list of publications below).

- My second post-doctoral experience (14 Sept 2003 – 30 Sept 2005) was undertaken in the Mineralogy Department at the South Australian Museum under the supervision of Professor A. Pring. My role essentially consisted of synthesising iron and nickel sulfides and structural characterisation of synthetic compounds compared to natural samples. The main synthetic methods used during this work required the preparation of the materials in sealed silica tubes and medium/high temperature furnaces, heating water bath and flow hydrothermal cell with temperature, pH and Eh control. The latter system, unique in Australia (designed, built and tested in our SA laboratories before initial measurements carried out at ANSTO, Sydney), can reproduce the natural conditions of formation and/or transformation of minerals used in the iron and nickel ore extraction, thus being of national Australian economic importance. The cell was successfully used in the transformation and in-situ observation with neutrons of the pentlandite to violarite transformation. The hydrothermal cell will be permanently available at ANSTO for any research scientist wishing to undertake in-situ measurements in such conditions. Another cell type, also prepared in our laboratory in Adelaide, and able to work at higher temperatures and pressures has been tested successfully at ISIS, U.K.

Synchrotron X-ray diffraction (using a Guinier camera and high resolution instrument available at the Australian Beamline in Tsukuba, Japan), neutron and electron microscopy measurements were used to characterise the materials and follow the cationic ordering and structural variations with composition and temperature. Rietveld refinements were undertaken using the Rietica software.

International collaborations on parallel projects such as the perovskite-derived materials in the BaLaInO system, with ionic conduction properties, were successfully established. Structural characterisations were made using Infrared spectroscopy and the idea of phonon modes was developed in Fe-containing sphalerite materials.
(see publications listed below).

- The third post-doctoral position was undertaken at the Chemistry Department of Professor B. Raveau at the CRISMAT Laboratory of Caen, France, working with Professor M. Hervieu on the preparation (essentially using hydrothermal bombs and high pressure systems) of new transition metal acid phosphates with potential ionic (protonic) conduction properties. The French CNRS Institution financed this position. This role involved close collaboration with Dr A. Guesdon and Dr V. Caignaert. Indeed, phosphates are a specific part of oxides that can integrate a few number of transition metals, with possible mixed valency, fascinating structural and physical properties depending on the combination. Their potential capability for being used as conductive materials for solid fuel cells, batteries or in catalysis, with often some electrical and/or magnetic properties are of particular interests. Structural characterisations of these new materials necessitated the use of a CCD 4-circles, X-ray powder diffractometer, SEM/TEM/HREM and physical measurements. A system that can control and measure their ionic properties under specific and drastic partial pressure of gas was also developed.

• Publications (2002-2016):

- 61- “First-principles electronic structure calculations for the whole spinel oxide solid solution range $Mn_xCo_{3-x}O_4$ ($0 < x < 3$) and their comparison with experimental data”,
R. Arras, T.L. Le, S. Guillemet-Fritsch, P. Dufour, **C. Tenaillon**, *Phys. Chem. Chem. Phys.*, **18** 26166-26176 (2016).
- 60- “Internal barrier layer capacitor, nearest neighbor hopping, and variable range hopping conduction in $Ba_{1-x}Sr_xTiO_{3-\delta}$ nanoceramics”,
S Sulekar, JH Kim, H Han, P Dufour, **C Tenaillon**, JC Nino, E Cordoncillo, H. Beltran-Mir, S. Dupuis, S. Guillemet-Fritsch *J. Mater. Sci.*, **51**(16), 7440-7450 (2016)
- 59- “Understanding the Fragmentation Pattern of Marine Plastic Debris”,
A. Ter Halle, L. Ladirat, X. Gendre, D. Goudouneche, C. Pusineri, C. Routaboul, **C. Tenaillon**, B. Duployer, E. Perez, *Env. Sci. Technol.*, **50**, 5668–5675 (2016).
- 58- “Microstructural and optical properties of spinel oxide $M_xCo_{2-x}MnO_4$ ($M = Ni, Zn$ or Cu ; $0 < x < 1$) thin films prepared by inorganic polycondensation and dip-coating methods”,
T.L. Le, S. Guillemet-Fritsch, P. Dufour, **C. Tenaillon**, *Thin Solid Films*, **612**, 14-21 (2016).
- 57- “Further morphological evidence on South African earliest Homo lower postcanine dentition: Enamel thickness and enamel dentine junction”,
L. Pan, J. Dumoncel, F. de Beer, J. Hoffman, J. F. Thackeray, B. Duployer, **C. Tenaillon**, J. Braga, *J. Human Evolution*, **96**, 82-96 (2016).
- 56- “Upper third molar internal structural organization and semicircular canal morphology in Plio-Pleistocene South African cercopithecoids”,
A. Beaudet, J. Dumoncel, J. F. Thackeray, L. Bruxelles, B. Duployer, **C. Tenaillon**, L. Bam, J. Hoffman, F. de Beer, J. Braga, *J. Human Evolution*, **95**, 104-120 (2016).
- 55- “Colossal permittivity and low losses in $Ba_{1-x}Sr_xTiO_{3-d}$ reduced nanoceramics”,
S. Dupuis, S. Sulekar, J.H. Kim, H. Han, P. Dufour, **C. Tenaillon**, J.C. Nino, S. Guillemet-Fritsch, *J. Europ. Ceram. Soc.*, **36**, 567-575 (2016).
- 54- “Enhancing the reactivity of Al/CuO nanolaminates by Cu incorporation at the interfaces”,
L. Marin, C.E. Nanayakkara, J.-F. Veyan, B. Warot-Fonrose, S. Joulie, A. Esteve, **C. Tenaillon**, Y.J. Chabal, C. Rossi, *Appl. Mat. Interfaces*, **7**, 11713-11718 (2015).
- 53- “Room temperature inorganic polycondensation of oxide (Cu_2O and ZnO) nanoparticles and thin films preparation by the dip-coating technique”,
G. Salek, **C. Tenaillon**, P. Dufour, S. Guillemet-Fritsch, *Thin Solid Films*, **589** 872-876 (2015).
- 52- “Sustainable low temperature preparation of $Mn_{3-x}Co_xO_4$ ($0 < x < 3$) spinel oxide colloidal dispersions used for solar absorber thin films”,
G. Salek, P. Dufour, S. Guillemet-Fritsch, **C. Tenaillon**, *Mat. Chem. Phys.*, **162**, 252-262 (2015).
- 51- “Characterization and functionalization by sol-gel route of SiC foams”,
J. Mollicone, F. Ansart, P. Lenormand, B. Duployer, **C. Tenaillon**, J. Vicente, *J. Eur. Ceram. Soc.*, **34**, 3479-3487 (2014).

- 50- “Magnetron Sputtered Al-CuO Nanolaminates: Effect of Stoichiometry and Layers Thickness on Energy Release and Burning Rate”,
M. Bahrami, G. Taton, V. Conédéra, L. Salvagnac, **C. Tenailléau**, P. Alphonse, C. Rossi, *Propellants, Explosives, Pyrotechnics*, **39**, 365-373 (2014).
- 49- “Real-time crystallization in fluorinated parylene probed by conductivity spectra”,
R. Khazaka, M. L. Locatelli, S. Diaham, **C. Tenailléau**, R. Kumar, *Appl. Phys. Letters*, **104**, 112902 (2014).
- 48- “Complex diffusion behavior of oxygen in nanocrystalline BaTiO₃ ceramics”,
R.A. De Souza, C. Voisin, H. Schraknepper, M. Teusner, M. Kessel, P. Dufour, **C. Tenailléau**, S. Guillemet-Fritsch, *Phys. Chem. Chem. Phys.*, **16**, 2568-2575 (2014).
- 47- “Dielectric strength of parylene HT”,
S. Diaham, M. Bechara, M.L. Locatelli, R. Khazaka, **C. Tenailléau**, R. Kumar, *J Appl. Physics*, **5**, 054102 (2014).
- 46- “Low-temperature carbon monoxide and propane total oxidation by nanocrystalline cobalt oxides”,
G. Salek, P. Alphonse, P. Dufour, S. Guillemet-Fritsch, and **C. Tenailléau**, *Appl. Catalysis B: Environmental.*, **147**, 1-7 (2014).
- 45- “Microstructure of single-phase cobalt and manganese oxide spinel Mn_{3-x}Co_xO₄ ceramics”,
N. El Horr, S. Guillemet-Fritsch, A. Rousset, H. Bordeneuve and **C. Tenailléau**, *J. Eur. Ceram. Soc.*, **34**, 317-326 (2014).
- 44- “Influence of oxygen substoichiometry on the dielectric properties of BaTiO_{3-δ} nanoceramics obtained by SPS”,
C. Voisin, S. Guillemet-Fritsch, P. Dufour, **C. Tenailléau**, H. Han and J.C. Nino, *Int. J. Appl. Ceram. Technol.*, **10**, E122-133 (2013).
- 43- “Origin of colossal permittivity in BaTiO₃ via broadband dielectric spectroscopy”,
H. Han, C. Voisin, S. Guillemet-Fritsch, P. Dufour, **C. Tenailléau**, C. Turner and J.C. Nino, *J. Appl. Physics*, **113**(2), 024102-1/8 (2013).
- 42- “Electrical Properties of Mn_{3-x}Co_xO₄ (0 ≤ x ≤ 3) Ceramics: An Interesting System for Negative Temperature Coefficient Thermistors”,
A. Rousset, **C. Tenailléau**, P. Dufour, H. Bordeneuve, I. Pasquet, S. Guillemet-Fritsch, V. Poulain and S. Schuurman, *Int. J. Appl. Ceram. Technol.*, **10**(1), 175–185 (2013).
- 41- “Interfacial chemistry in Al/CuO reactive nanomaterial and its role in exothermic reaction”,
C. Rossi, J. Kwon, J.M. Ducere, P. Alphonse, M. Bahrami, M. Petrantoni, J.F. Veyan, **C. Tenailléau**, A. Esteve and Y.J. Chabal, *Appl. Mater. Interfaces*, **5**, 605-613 (2013).
- 40- “Differential thermal analysis assessment of beta phase precipitation in Al-6.5Si-1Fe alloy”,
D. Ferdian, B. Suharno, B. Duployer, **C. Tenailléau**, L. Salvo and J. Lacaze, *Trans. Indian Inst. Metals*, **65**, 821 (2012).
- 39- “A simple preparation process of pure Mn_{3-x}Co_xO₄ (x = 1, 1.5 and 2) desert rose-like nanoparticles and their optical properties”,
G. Salek, S. Guillemet-Fritsch, P. Dufour and **C. Tenailléau**, *Int. J. Chem.*, **4**(6), 44-53 (2012).

- 38- “Recent progress in the shaping and sintering of barium titanate nanoparticles. Application to high permittivity capacitors”,
S. Guillemet-Fritsch, C. Voisin, R. N. Quintero, P. Dufour, **C. Tenaillau**, J.A. Aguilar Garib, M.E. Reyes Melo and B. Durand, Proceeding IMAPS/Acers 8th International CICMT Conference and Exhibition 2012/ April 16-19, Erfurt, Germany. TP53, 222-227 (2012).
- 37- “Microstructure of Ba_{1-x}La_xTiO_{3-d} ceramics sintered by spark plasma sintering”,
N. El Horr, Z. Valdez-Nava, **C. Tenaillau** and S. Guillemet-Fritsch, *J. Eur. Ceram. Soc.*, **31**, 1087-1096 (2011).
- 36- “Electrical Conductivity of Parylene F at High Temperature”,
S. Diahm, M. Bechara, M.L. Locatelli and **C. Tenaillau**, *J. Electronic Mat.*, **40**, 295-300 (2011).
- 35- “Structural characterization of dense reduced BaTiO₃ and Ba_{0.95}La_{0.05}TiO₃ nanoceramics showing colossal dielectric values”,
Z. Valdez-Nava, **C. Tenaillau**, S. Guillemet-Fritsch, N. El Horr, T. Lebey, P. Dufour, B. Durand and J-Y. Chane-Ching, *J. Phys. Chem. Solids*, **72**, 17-23 (2011).
- 34- “Multilayered Al/CuO thermite formation by reactive magnetron sputtering: nano versus micro”,
M. Petrantoni, C. Rossi, L. Salvagnac, V. Conédéra, A. Estève, **C. Tenaillau**, P. Alphonse and Y. J. Chabal, *J. Appl. Phys.*, **108**, 084323/1-5 (2010).
- 33- “Nanoenergetics on a chip: technology and application for micro ignition in safe arm and fire systems”,
M. Petrantoni, M. Bahrami, L. Salvagnac, V. Conédéra, C. Rossi, P. Alphonse, C. Tenaillau, Proceedings Power MEMS Leuven, 39-42 (2010).
- 32- “Magnetic properties of cobalt and manganese oxide spinel ceramics”,
S. Guillemet-Fritsch, **C. Tenaillau**, H. Bordeneuve and A. Rousset, *Adv. Sci. Tech.: 12th International ceramics congress Part. F*, **67**, 143-148 (2010).
- 31- “Realization of aligned three-dimensional single-crystal chromium nanostructures by thermal evaporation”,
K. Zhang, **C. Tenaillau**, P. Alphonse and J-Y. Chane-Ching, *Appl. Phys. A*, **100**, 1049-1055 (2010).
- 30- “A thermosyphon driven hydrothermal flow-through cell for *in situ* and time-resolved neutron studies”,
F. Xia, B. O’Neill, Y. Ngothai, J. Peak, **C. Tenaillau**, B. Etschmann, G. Qian, J. Brugger, A. Studer, S. Olsen and A. Pring, *J. Appl. Cryst.*, **43**, 1-9 (2010).
- 29- “Cation distribution in manganese cobaltite spinels Co_{3-x}Mn_xO₄ (0 ≤ x ≤ 1) determined by thermal analysis”,
H. Bordeneuve, A. Rousset, **C. Tenaillau** and S. Guillemet-Fritsch, *J. Therm. Anal. Calorim.*, **101**, 137 (2010).
- 28- “Structural variations and cation distributions in Mn_{3-x}Co_xO₄ (0 ≤ x ≤ 3) dense ceramics using neutron diffraction”,
H. Bordeneuve, **C. Tenaillau**, S. Guillemet-Fritsch, R. Smith, E. Suard and A. Rousset, *Solid State Sci.* **12**, 379 (2010).

- 27- “Synthesis process of nanowired Al/CuO thermite”,
M. Petrantoni, C. Rossi, V. Conédéra, D. Bourrier, P. Alphonse and **C. Tenailléu**, *J. Phys. Chem. Solids*, **71**, 80 (2010).
- 26- “Colossal dielectric permittivity of BaTiO₃-based nanocrystalline ceramics sintered by spark plasma sintering”,
Z. Valdez-Nava, S. Guillemet-Fritsch, **Ch. Tenailléu**, T. Lebey, B. Durand and J.-Y. Chane-Ching, *J. Electroceram.*, **22**, 238 (2009).
- 25- “A new intersecting tunnel structure in the A^IM^{III}[PO₃(OH)₂] series for A^I=Ag, M^{III}=In: Analysis of structural relationships”,
A. Guesdon, F. Romero Sarria, **C. Tenailléu** and B. Raveau, *Solid State Sci.*, **11**, 349 (2009).
- 24- “Integrating Al with NiO nano honeycomb to realize an energetic material on silicon substrate”,
K. Zhang, C. Rossi, P. Alphonse, **C. Tenailléu**, S. Cayez and J.-Y. Chane-Ching, *Appl. Phys. A-Mater.*, **94**, 957 (2009).
- 23- “CuO nanowires grown from Cu film heated under a N₂/O₂ flow”,
K. Zhang, C. Rossi, **C. Tenailléu** and V. Conedera, *J. Nanosci. Nanotechnol.*, **9**, 1418 (2009).
- 22- “Nanostructured materials with highly dispersed Au-Ce_{0.5}Zr_{0.5}O₂ nanodomains: A route to temperature stable Au catalysts?”,
J.-Y. Chane-Ching, F. Moncho, D. Truyen, P. Alphonse, **C. Tenailléu**, J.D. Marty and L. Datas, *J. Mater. Chem.*, **18**, 4712 (2008).
- 21- “Modular construction of oxides structures – Compositional control of transition metal coordination environments”,
C. Tenailléu, M. Allix, J.B. Claridge, M. Hervieu, M.F. Thomas, J.P. Hirst and M.J. Rosseinsky, *J. Am. Chem. Soc.*, **130**(24), 7570 (2008).
- 20- “The crystal chemistry of Fe-bearing sphalerites: An Infrared spectroscopic study”,
A. Pring, S. Tarantino, **C. Tenailléu**, B. Etschmann, M. Carpenter, M. Zhang, Y. Liu and R.L. Withers, *Am. Mineral.*, **93**, 591 (2008).
- 19- “NiO nanostructured honeycomb realized by annealing Ni film deposited on silicon”,
K. Zhang, C. Rossi, P. Alphonse and **C. Tenailléu**, *J. Nanosci. Nanotechnol.*, **8**(11), 5903 (2008).
- 18- “Synthesis of NiO nanowalls by thermal treatment of Ni thin film deposited onto a stainless steel substrate”,
K. Zhang, C. Rossi, P. Alphonse and **C. Tenailléu**, *Nanotechnology*, **19**(15), 5605 (2008).
- 17- “Aligned three-dimensional prism-like magnesium nanostructures realized onto silicon substrate”,
K. Zhang, C. Rossi, **C. Tenailléu** and P. Alphonse, *Appl. Phys. Lett.*, **92**(6), 3123 (2008).
- 16- “Colossal permittivity in ultrafine grain size BaTiO_{3-x} and Ba_{0.95}La_{0.05}TiO_{3-x} materials”,
S. Guillemet-Fritsch, Z. Valdez-Nava, **C. Tenailléu**, T. Lebey, B. Durand and J.-Y. Chane-Ching, *Adv. Mater.*, **20**, 551 (2008).

- 15- “Kinetics and mechanism of hydrothermal alteration from pentlandite to violarite”,
F. Xia, G. Chen, A. Pring, J. Brugger, Y. Ngothai, B. O'Neill, C. Colby, **C. Tenaillau**, H. Wang, Y. Yang, *Acta Geologica Sinica (Dizhi Xuebao)*, **81**(10), 1378 (2007).
- 14- “Development of a nano-Al/CuO based energetic material on silicon substrate”,
K. Zhang, C. Rossi, GAA. Rodriguez, **C. Tenaillau** and P. Alphonse, *Appl. Phys. Lett.*, **91**(11), 3117 (2007).
- 13- “Synthesis of large-area and aligned copper oxide nanowires from copper thin film on silicon substrate”,
K. Zhang, C. Rossi, **C. Tenaillau**, P. Alphonse and J.-Y. Chane-Ching, *Nanotechnology*, **18**(27), 5607 (2007).
- 12- “A neutron powder diffraction study of Fe and Ni distributions in synthetic pentlandite and violarite using ^{60}Ni isotope”,
C. Tenaillau, B. Etschmann, R. Ibberson and A. Pring, *Am. Mineral.*, **91**, 1442 (2006).
- 11- “A flow-through hydrothermal cell for *in-situ* neutron diffraction studies of phase transformation”,
B.K. O'Neill, **C. Tenaillau**, Y. Nogthai, A. Studer, J. Brugger and A. Pring, *Physica B*, **385-86**, 942 (2006).
- 10- “Transformation of pentlandite to violarite under mild hydrothermal conditions”,
C. Tenaillau, A. Pring, B. Etschmann, J. Brugger, B.Grguric and A. Putnis, *Am. Mineral.*, **91**, 706 (2006).
- 9- “Thermal expansion of troilite and pyrrhotite determined by *in-situ* cooling (873 to 373 K) neutron powder diffraction measurements”,
C. Tenaillau, B. Etschmann, H. Wang, A. Pring and A. Studer, *Mineral. Mag.*, **69**, 205 (2005).
- 8- “Composition-induced structural phase transitions in the $(\text{Ba}_{1-x}\text{La}_x)_2\text{In}_2\text{O}_{5+x}$ ($0 \leq x \leq 0.6$) system”,
C. Tenaillau, A. Pring, S.M. Moussa, Y. Liu, R. Withers, S.C. Tarantino, M. Zhang and M.A. Carpenter, *J. Solid State Chem.*, **178**, 882 (2005).
- 7- “Soft phonon modes, structured diffuse scattering and the crystal chemistry of Fe-bearing sphalerites”,
R.L. Withers, T.R. Welberry, A. Pring, **C. Tenaillau** and Y. Liu, *J. Solid State Chem.*, **178**, 655 (2005).
- 6- “Experimental study of the transformation of pentlandite/pyrrhotite to violarite”,
W.H Wui, C. Tenaillau, A. Pring, J. Brugger, Roach I.C. Regolith, CRC LEME, 146-150 (2004).
- 5- “EPR investigations of oxidation effects in $(\text{V}_{1-x}\text{Mo}_x)_{2-\delta}\text{O}_3$ ”,
C. Tenaillau, A. Kassiba and P. Lacorre, *J. Phys. Chem. Solids*, **65**, 1809 (2004).
- 4- “Influence of Mo-doping on the magnetic properties of $(\text{V}_{1-x}\text{Mo}_x)_{2-\delta}\text{O}_3$ ”,
C. Tenaillau, E. Suard, J. Rodriguez-Carvajal, and P. Lacorre, *J. Magn. Magn. Mater.*, **278**, 57 (2004).

3- “Effect of doping and temperature on the crystal structure of $(V_{1-x}Mo_x)_{2-\delta}O_3$ above and below the metal/insulator transition ”,

C. Tenaillau, E. Suard, J. Rodriguez-Carvajal, and P. Lacorre, *J. Solid State Chem.*, **174**, 431 (2003).

2- “Effect of Mo doping on the room temperature structure of vanadium sesquioxide”,

C. Tenaillau, E. Suard, J. Rodriguez-Carvajal, M-P. Crosnier-Lopez and P. Lacorre, *Chem. Mater.*, **14**, 2569 (2002).

1- “On a new family of doped vanadium sesquioxides $(V_{1-x}Mo_x)_{2-\delta}O_3$ ”,

P. Lacorre and **C. Tenaillau**, *Solid State Sci.*, **4**, 217 (2002).

• **Book Chapter**

- “Nano energetic materials: synthesis, characterization, modelling and applications”,

K. Zhang, P. Alphonse and **C. Tenaillau**, edited by J. Howell and E. Timothy, from *Energetic Materials* 141-164 (2010).

• **Most Recent participations to Conferences and Workshops**

Conferences and invited communications in International and National Congress

2015

Light absorbing oxide materials for solar energy applications

C. TENAILLEAU, T.L. LE, G. SALEK, S. GUILLEMET-FRITSCH, P. DUFOUR,

International Workshop on Nanoscience and Nanotechnology: Joint 4th Asia-Pacific Chemical and Biological Microfluidics Conference, Da Nang, Vietnam, Nov. 2nd – Nov. 4th, 2015.

2013

Origin of Colossal Permittivity in BaTiO₃ Nanoceramics

S. GUILLEMET-FRITSCH, C. VOISIN, P. DUFOUR, C.TENAILLEAU, H. HAN, C. TURNER, J. C. NINO, H. SCHRAKNEPPER, M. TEUSNER, M. KESSEL, R. A. DE SOUZA
ICE 2013 6th Intern. Conference on Electroceramics, 9-13th Nov. 2013, João Pessoa, Brazil.

Low-cost preparation of metal oxide nanoparticles and thin films for photovoltaics

C. TENAILLEAU, G. SALEK, S. GUILLEMET-FRITSCH, P. DUFOUR

THERMEC2013 International Conference on Processing & Manufacturing of Advanced Materials, 2-6 December 2013, Las Vegas, USA.

2012

Recent progress in the optimization of the electrical properties of barium titanate nanoceramics obtained by SPS

S. GUILLEMET-FRITSCH, C. VOISIN, P. DUFOUR, C. TENAILLEAU

ICWNCN International Conference and Workshop on Nanostructured Ceramics and other Nanomaterials, New Dehli, India 13-16th of March 2012.

Recent progress in the shaping and sintering of barium titanate nanoparticles. Application to high permittivity capacitors

S. GUILLEMET-FRITSCH, C. VOISIN, R. NAVA QUINTERO, P. DUFOUR, C. TENAILLEAU, J.A. AGUILAR GARIB, M.E. REYES MELO, B. DURAND

IMAPS/ACerS 8th International Conference and Exhibition on Ceramic Interconnect and Ceramic Microsystems Technologies, 16-19 April 2012, Erfurt, Germany.

Aging phenomena in negative temperature coefficient thermistor: A review for different oxide ceramics

S. GUILLEMET-FRITSCH, C. TENAILLEAU, A. ROUSSET

Electroceramics XIII, 24-27 June 2012, University of Twente, Enschede, Neetherland.

Oral communications in International and National Congress

2015

Microstructural characterization of SiC foams used as solar absorber devices

J. MOLLICONE, B. DUPLOYER, P. LENORMAND, C. TENAILLEAU, J. VICENTE, F. ANSART

2nd International Conference on Tomography of Material and Structures, Quebec, Canada, June 29th – July 3rd, 2015.

Celtic drum fibula morphology, preparation technique and conservation state determined by X-ray computed tomography

C. TENAILLEAU, E. DUBREUCQ, B. DUPLOYER, L. SEVERAC, P.Y. MILCENT, L. ROBBIOLOLA

2nd International Conference on Tomography of Material and Structures, Quebec, Canada, June 29th – July 3rd, 2015.

Microstructural and optical properties of spinel oxides $A_{0.15}Co_{1.85}Mn_{1.00}O_4$ ($A = Ni, Cu, Zn$) prepared by coprecipitation and dip-coating methods

T.L. LE, S. GUILLEMET-FRITSCH, P. DUFOUR, C. TENAILLEAU, Les Journées Nationales du Réseau Doctoral en Microélectronique, 5-7th of May 2015, Bordeaux, France.

2014

Préparation et caractérisation de films minces absorbants de lumière à partir de dispersions colloïdales de nanoparticules d'oxydes

G. SALEK, C. TENAILLEAU, P. DUFOUR, S. GUILLEMET-FRITSCH, Matériaux 2014, Montpellier, France, Nov. 24-28th 2014.

Préparation et caractérisation de céramiques denses de $Ba_{1-x}Sr_xTiO_3$ par SPS

S. DUPUIS, P. DUFOUR, C. TENAILLEAU, S. GUILLEMET-FRITSCH Matériaux 2014, Montpellier, France, Nov. 24-28th 2014.

Elaboration et caractérisation de films minces absorbants de lumière à partir de dispersions colloïdales de nanoparticules d'oxydes

G. SALEK, P. DUFOUR, C. TENAILLEAU, S. GUILLEMET-FRITSCH

Journées annuelles du GFC 2014, Groupe Français de la Céramique, 18-20 Mars 2014, Lyon, France

2013

Preparation and characterisation of light-absorber metal oxide thin films by dip-coating in nanoparticles

C. TENAILLEAU, G. SALEK, S. GUILLEMET-FRITSCH, P. DUFOUR

Nanotechnology for next generation high efficiency photovoltaics, Spring international school, 1-6 April 2013, Cargèse, Corse, France

Metal oxide-based ceramic coatings and correlation between their structure and optic/electronic properties

G. SALEK, S. GUILLEMET-FRITSCH, P. DUFOUR, C. TENAILLEAU

ECERS XIII 13th International Conference of the European Ceramic Society, 23-27 June 2013, Limoges, France

2011

Dielectric properties of modified barium titanate ceramics obtained by spark plasma sintering

C. VOISIN, S. GUILLEMET-FRITSCH, P. DUFOUR, C. TENAILLEAU

ECERS XII, 12th Conference of the European Ceramic Society, 19-23 June 2011, Stockholm, Sweden

Dielectric properties of barium titanate ceramics obtained by spark plasma sintering: Comparison between commercial powders and powders synthesized by the oxalate method

C. VOISIN, S. GUILLEMET-FRITSCH, P. DUFOUR, C. TENAILLEAU

International Workshop on Spark Plasma Sintering, 20-21 October 2011, Capbreton, France

High permittivity capacitors based on barium titanate ceramics obtained by spark plasma sintering for embedded electronics

C. VOISIN, S. GUILLEMET-FRITSCH, P. DUFOUR, C. TENAILLEAU

Safran Symposium, 8-9 November 2011, Lyon, France

Mn and Co spinel oxide ceramics for future uses as NTC thermistors

C. TENAILLEAU, H. BORDENEUVE, S. GUILLEMET-FRITSCH, A. ROUSSET

ICE 2011 International Conference on Electroceramics, 12-16 December 2011, Sydney, Australia

Effect of the post annealing treatment on the dielectric properties of barium titanate nanoceramics obtained by SPS

S. GUILLEMET-FRITSCH, C. VOISIN, P. DUFOUR, C. TENAILLEAU

ICE 2011 International Conference on Electroceramics, 12-16 December 2011, Sydney, Australia

2010

Structure, microstructure and electrical properties of $Mn_{3-x}Co_xO_4$ ($0 < x < 3$) spinel ceramics: an interesting system for Negative Temperature Coefficient (NCT) thermistors

H. BORDENEUVE, C. TENAILLEAU, S. GUILLEMET-FRITSCH, A. ROUSSET, V. POULAIN, S. SCHURMAN

CIMTEC 2010 12th International Ceramics Congress, 6-11 June 2010, Montecatini Terme, Italy.

Elaboration et caractérisation de condensateurs forte permittivité à base d'oxyde de titanate de baryum pour l'électronique embarquée

C. VOISIN, S. GUILLEMET-FRITSCH, P. DUFOUR, C. TENAILLEAU

Matériaux 2010, 18-22 October 2010, Nantes, France

Poster communications in International and National Congress

2015

BaTiO₃-based composite materials for Electronics characterized by X-ray computed tomography

C. TENAILLEAU, S. DUPUIS, P. DUFOUR, B. DUPLOYER, S. GUILLEMET-FRITSCH

2nd International Conference on Tomography of Material and Structures, Quebec, Canada, June 29th – July 3rd, 2015

2013

Nanocéramiques de BaTiO₃ frittées par SPS : influence des précurseurs de titane et du rapport Ba/Ti sur les propriétés électriques

S. DUPUIS, C. VOISIN, S. GUILLEMET-FRITSCH, P. DUFOUR, C. TENAILLEAU

Journées annuelles du GFC 2013, Groupe Français de la Céramique, 26-28 March 2013, Orléans, France

Preparation and characterization of light absorber metal oxide based thin films

G. SALEK, S. GUILLEMET-FRITSCH, P. DUFOUR, C. TENAILLEAU

ICE 2013 6th International Conference on Electroceramics, 9-13 Novembre 2013, João Pessoa, Brazil

X-Ray Computed Tomography used for Cu₂O/ZnO Nanoceramics Characterization

C. TENAILLEAU, B. DUPLOYER, J.J. DEMAI, G. SALEK, P. DUFOUR, S. GUILLEMET-FRITSCH

1st International Conference on Tomography of Material and Structures, Ghent, Belgium, July 1-5, 2013.

Preparation of BaTiO₃ nanoceramics by spark plasma sintering. Study of the reoxidation process, oxygen diffusion and obtention of ceramic capacitors with optimized dielectric properties

C. VOISIN, S. GUILLEMET-FRITSCH, P. DUFOUR, C. TENAILLEAU

Safran Symposium, 3-4 December 2013, Versailles, France

2012

Influence of oxygen non stoichiometry on the dielectric properties of BaTiO_{3-d} nanoceramics

S. GUILLEMET-FRITSCH, C. VOISIN, P. DUFOUR, C. TENAILLEAU

2012 MRS Fall Meeting, 25-30 November 2012, Boston, USA

2011

High permittivity capacitors based on barium titanate ceramics obtained by spark plasma sintering for embedded electronics

C. VOISIN, S. GUILLEMET-FRITSCH, P. DUFOUR, C. TENAILLEAU

Safran Symposium, 8-9 November 2011, Lyon, France

2010

Elaboration et caractérisation de condensateurs forte permittivité à base de titanate de baryum dopé au lanthane

C. VOISIN, S. GUILLEMET-FRITSCH, P. DUFOUR, C. TENAILLEAU

Journées annuelles du GFC 2010, Groupe Français de la Céramique, 23-25 March 2010, St-Etienne, France

Séminaires

2016

La Tomographie RX pour la visualisation et la caractérisation de microstructures

C. TENAILLEAU

Journée Scientifique de la Fédération FERMAT FR3089, Toulouse, 20th of June 2016.

2015

Light absorbing oxide materials for solar energy applications

C. TENAILLEAU

USTH, Hanoi, 8 November 2015.

2013

Synthèse aqueuse de nanoparticules d'oxydes à l'ambiante et préparation de couches minces à partir de dispersions colloïdales,

C. TENAILLEAU

GDR CNRS AMC2 *Approches Multiphysiques pour les Colloïdes Concentrés*, 20-22 October 2013, Sète, France.

2012

Caractérisation des matériaux par microscopie électronique à transmission

C. TENAILLEAU

Ecole de Printemps « Techniques de Microcaractérisation » (Sciences des Matériaux, du vivant et des dispositifs), Toulouse, France, April 2nd-5th, 2012.

2010

Oxide semi-conductors for energy applications including photovoltaics

C. TENAILLEAU

Trento, Italie, 1st of December 2010.

2009

Materials for Energy conversion

C. TENAILLEAU

Ma2nd FERMaT-IMPACT meeting, Twente, Netherlands, October 13-16th, 2009.