

## Curriculum Vitae



**ANNIE PRADEL**  
Senior Research Scientist

French National Research for Scientific Research  
(Directeur de Recherche au Centre National de la Recherche Scientifique-CNRS)

Nationality            French  
Date of Birth            20 May 1956  
Address:                Institut C. Gerhardt UMR 5253 équipe PMDP  
                              Case Courrier 1503 Université Montpellier II  
                              34095 Montpellier cedex 5 France  
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### Education

**1988** – D. Sc. in Solid State Chemistry, Université Sciences et Techniques du Languedoc Montpellier (France)

**1981** - PhD in Solid State Chemistry, Université Sciences et Techniques du Languedoc Montpellier (France)

### Work Experience

**1997- Present** Senior Research Scientist, University Montpellier II, Montpellier France

**1983-1997** Research Scientist, University Montpellier II, Montpellier France

**1982-1983** Post Doc, University of Missouri-Rolla, ROLLA (Mo-USA),

**1990** - (4 months) visiting Scientist, University of California Santa Barbara (Ca, USA),

**1992** - (2 months) visiting Scientist, University of California Santa Barbara (Ca, USA),

**1994** – (6 weeks) visiting Scientist, University of California Santa Barbara (Ca, USA),

**1998** – 1 month visiting Scientist, University de Sao Paulo (Brazil)

## **Research Interests**

- Structure and dynamics of ion conducting chalcogenide glasses
- Chalcogenide glasses and their application for information storage (optical and electrical memories)
- Chalcogenide glasses and their application for IR integrated optics
- Chalcogenide glasses and their application for environmental control (chemical microsensors for ion detection in solution)

**Experimental methods:** Complex impedance spectroscopy, IR and Raman scattering, NMR, Microscopy (AFM, EFM, SEM, FE-SEM), Neutron scattering, neutron thermodiffraction, X-ray diffraction, Thermal methods - including Differential Scanning Calorimetry, DTA)

## **Publications**

~ 115 (list enclosed)

## **Invited Talks**

Over 10 at international conference (list enclosed)

## **Teaching Activities**

Master “Materials Chemistry and Physics (Chimie et Physicochimie des Matériaux)”  
Université Montpellier II France  
40 hours including Solid State NMR, Non Stoichiometry in Solids and Solid State Ionics

## **Conference organisation**

\*European Workshop on Glasses and Gels, Montpellier (France), 29-31 January 1992  
(Co-Chairman with Prof. M. Ribes)

\*Conférence sur l'Extension du Concept d'Etats Localisés dans les Phénomènes du Transport de Charge, Montpellier (France), 29-30 October 1992.

\*European Workshop on Piezoelectric Materials : crystal growth, properties and prospects, Montpellier (France), 1-2 December 1993.

\*V European Conference on Solid State Chemistry, Montpellier (France), 4-7 September 1995.

\*XVI International Symposium on Non Oxide and New Optical Glasses to be held in Montpellier France, April 20-25 2008 (Chairman)

## **Miscellaneous**

\*Head of the Research team « PMDP- physics and chemistry of disordered and porous materials » of the Institut Charles Gerhardt ICGM Montpellier » (13 permanent researchers)

\*Vice-president of the french Chemical Microsensors Club CMC2

\*Consultant to the French National Research Agency (Agence Nationale pour la Recherche ANR)

\*Consultant to the Institut Laue Langevin (ILL) - subcommittee in charge with “structure and dynamics of liquids and glasses”

## **Recent Collaborations**

### **Academic**

C.A. Angell (USA), D. Gonbeau (Pau-F), P. Kern (Grenoble-F), G. Cuello (ILL Grenoble-F), J.E. Broquin (Grenoble-F), B. Arcondo (Buenos-Aires Argentina), A. Urena (Buenos-Aires Argentina), M. Fontana (Buenos-Aires Argentina), A. Kolobov (Tsukuba Japan), P. Fons (Tsukuba Japan), J. Tominaga (Tsukuba Japan).

### **Industrial**

M. Barillot (Thales Alenia Space Cannes-F), V. Kirchner (European Space Agency The Netherlands)

## **Languages**

French, English

## **Hobbies**

Traveling, Hiking

## **Main results in the field of Chalcogenide Materials**

My first investigation in the field of chalcogenide glasses concerned the domain of Solid State Ionics. With the development of a twin roller fast quenching apparatus, I was able to prepare large series of lithium conductive chalcogenide glasses that exhibit very high ionic conductivity and were proposed as solid electrolytes for all solid state batteries (Solid State Ionics, 17, 147 (1985), Solid State Ionics, 18-19, 351 (1986)).

With time, I slowly moved towards a broader study of chalcogenide glasses that included crystalline and glassy, bulk and thin film materials with applications in the field of solid state ionics, IR integrated optics, information storage and environmental control.

In the recent years, three aspects were developed that led to important results:

\*In the domain of Solid State Ionics, my research has been focused on glasses of interest in the development of electrical memories and more precisely in the so-called photo-metallization cells (PMC) memories. In the course of this investigation, our research team carried out experiments based upon the use of the Electrical Field Microscopy, for the first time in the case of inorganic glasses. Such a technique helped us in visualizing electrical heterogeneity in Ag-Ge-Se glasses and showed the percolation threshold that explains the jump in electrical conductivity observed when increasing the amount of silver in the Ge-Se matrix (J. Optoelectr. Adv. Materials 8(6) 2112-2116 (2006); J. Non-Crystalline Solids 353 (2007) 1261-1263). Additional neutron diffraction experiments showed that the Ag-Ag correlations were drastically different below and above the percolation threshold (A. Pradel, ANC3, Brasov, Roumania, 2-6 July 2007)

\*In the domain of optical storage of information, the main investigation was carried out in the framework of a project (Chalmemstory) funded by the French "Agence Nationale de la Recherche" and with A. Kolobov as a co-worker during his stay in Montpellier (2005-2007). We studied the changes occurring in the structure of Ge-Sb-Te materials when they were submitted to a large pressure (up to several tenths of GPa). The most important result is the amorphization of  $\text{Ge}_2\text{Sb}_2\text{Te}_5$  under pressure. Such a result led us to suggest that the pressure is a parameter that should not be neglected when one deals with phase change under a laser beam (Phys.Rev. Letters 97 (2006) 035701).

\*Finally, in the framework of a more technological project funded by the European Space Agency, we are currently working at developing integrated IR optical devices to be used in spatial interferometers (Appl. Phys. Lett. 90, 011110 (2007)). Such a project led us to develop new equipment: a co-evaporator that helped us producing high quality ternary telluride layers and developing waveguides able to transmit light in the infrared up to 20  $\mu\text{m}$  (Optoelectronics and Advanced Materials – Rapid Communications 1(10), 487 – 490 (2007)).

## PUBLICATIONS

### Patent

Matériaux amorphes ou partiellement amorphes conducteurs ioniques de l'argent, leur procédé de fabrication et leurs applications électrochimiques.  
Brevet CNRS 86.01918.

### Book Edition

Journal de Physique vol. 2 Colloque 2 Suppl. JP III n° 10.  
Proceedings European Workshop on Glasses and Gels, Montpellier (Octobre 1992).  
Eds A. PRADEL et M. RIBES.

### Book Chapter

Capteurs potentiométriques (ions et gaz dissous)  
A. PRADEL et E. SAINT AMAN  
Chapter 4 traité Hermes : Microcapteurs chimiques et biologiques Tome 2 Applications en milieu liquide (2003)

### Papers

- 1 -Propriétés thermoélectriques de  $Tl_9BiTe_6$ .  
A. PRADEL, J.C. TEDENAC, D. COQUILLAT et G. BRUN  
Revue de Chimie Minérale, 19, 43 (1982).
- 2 -Physical Properties of  $AgTlX$  ( $X = S, Se, Te$ ) phases.  
J.C. TEDENAC, G. BRUN, A. PRADEL, D. COQUILLAT, B. PISTOULET and M. MAURIN  
Proc. 2nd European Conf.Solid State Chemistry, 3, 361 (1982).
- 3 -Mise au point dans le ternaire  $Tl-Bi-Te$ . Existence de deux phases non stoechiométriques de type  $TlBiTe_2$ .  
A. PRADEL, J.C. TEDENAC, G. BRUN et M. MAURIN  
J. Solid State Chem. 45, 99 (1982).
- 4 -Etude des phases semiconductrices de formule  $AgTlX$  ( $X = S, Se, Te$ ).  
G. BRUN, A. PRADEL, J.C. TEDENAC et M. MAURIN  
Mat. Res. Bull.,17, 533 (1982).
- 5 -Growth and physical properties of  $TlBiTe_2$  crystals  
D. COQUILLAT, A. PRADEL, G. BRUN and J.C. TEDENAC  
Phys. Stat. Sol.(a), 82, 295 (1984).
- 6 -Effect of rapid quenching on electrical properties of lithium conductive glasses.  
A. PRADEL, T. PAGNIER and M. RIBES  
Solid State Ionics, 17, 147 (1985).
- 7 -Electrical properties of lithium conductive silicon sulfide glasses prepared by twin roller quenching  
A. PRADEL and M. RIBES  
Solid State Ionics, 18-19, 351 (1986).

- 8 -Origin of thermally stimulated currents in sodium silicate glasses  
A. PRADEL and D.E.DAY  
J. Non Cryst. Solids 99, 59, (1988).
- 9 -Influence of  $Al_2S_3$  on the electrical conductivity of  $Li_2S-SiS_2$  glass system.  
V.K. DESHPANDE, A. PRADEL and M. RIBES  
Solid State Ionics, 28-30, 756 (1988).
- 10  $^7Li$  NMR study of  $Li_2S-SiS_2$  glass system  
A. PRADEL, M. RIBES and M. MAURIN  
Solid State Ionics, 28-30, 762 (1988).
- 11  $-(AgI)_x(Ag_2S GeS_2)_{1-x}$  glasses studied by  $^{109}Ag$  NMR.  
J. ROSS, D. BRINKMANN, M. MALI, A. PRADEL and M. RIBES  
Solid State Ionics, 28-30, 710 (1988).
- 12 -The mixed glass former effect in the  $Li_2S-SiS_2-GeS_2$  system  
V.K. DESHPANDE, A. PRADEL and M. RIBES  
Mat. Research Bull., 23(3), 379 (1988).
- 13 -Lithium chalcogenide conductive glasses (papier de revue).  
A. PRADEL and M. RIBES  
Mat. Chem. Phys., 23, 121 (1989).
- 14 -Ionic conductive glasses  
A. PRADEL and M. RIBES  
Mat. Sc. and Eng., B3, 45 (1989).
- 15 -The use of ionic and mixed conductive glasses in microbatteries  
R. CREUS, J. SARRADIN, R. ASTIER, A. PRADEL and M. RIBES  
Mat. Sc. and Eng, B3, 109 (1989).
- 16 -Use of thermodynamic model to interpret ionic conduction in oxide and sulfide binary glasses with  $Li^+$  conduction  
A. PRADEL, F. HENN, J.L. SOUQUET and M. RIBES  
Phil. Mag., B 60(6), 741 (1989).
- 17 -Structural transformation of thiosilicate glasses :  $^{29}Si$  MAS-NMR evidence for edge-sharing in the system  $Li_2S-SiS_2$ .  
H. ECKERT, J. KENNEDY, A. PRADEL and M. RIBES  
J. Non Cryst. Solids, 113, 287 (1989).
- 18 -Study and characterization of thin films of conductive glasses with a view to application in microionics.  
J. SARRADIN, R. CREUS, A. PRADEL, R. ASTIER and M. RIBES  
Nato ASI series volume : Solid state microbatteries Ed. J.R. AKRIDGE and M. BALKANSKI, Plenum Press, B27, 99 (1990).
- 19 -Relaxation processes in ionic conductive chalcogenide glasses studied by electrical and NMR spectroscopies.  
A. PRADEL and M. RIBES  
J. Non Cryst. Solids, 131-133, 1063 (1991).
- 20 -Ionic and atomic degrees of freedom in silver chalcogenide glasses studied by mechanical and electrical spectroscopies.  
S. ETIENNE, J. PEREZ, A. PRADEL and M. RIBES

- J. Non Cryst. Solids, 131-133, 1072 (1991).
- 21 -A quasi elastic neutron scattering study of  $\text{Ag}^+$  ion motion in the superionic glassy system  $\text{Ag}_2\text{S-GeS}_2$   
A.P. OWENS, A. PRADEL, M. RIBES and S.R. ELLIOTT  
J. Non Cryst. Solids, 131-133, 1104 (1991).
- 22 -A study of  $\text{Ag}^+$  ion dynamics in  $\text{Ag}_2\text{S-GeS}_2$  glasses  
A.P. OWENS, A. PRADEL, M. RIBES and S.R. ELLIOTT  
Mat. Res. Soc. Symp. Proc., 210, 621 (1991).
- 23 -Ionically conductive chalcogenide glasses  
A. PRADEL and M. RIBES  
J. of Solid State Chem., 96, 247-257 (1992).
- 24 -Lithium conductive selenide glasses  
V. MICHEL-LLEDOS, A. PRADEL and M. RIBES  
Eur. J. Solid State Inorg. Chem., 29, 301-310 (1992).
- 25 -Structural and electrical characterization of glasses in the system  $\text{Li}_2\text{Se-SiSe}_2$  by  $^{29}\text{Si}$  MAS NMR and Raman spectroscopy  
A. PRADEL, V. MICHEL-LLEDOS, M. RIBES and H. ECKERT  
Solid State Ionics, 53-56, 1187-1193 (1992).
- 26 -A study of the mixed alkali effect by frequency-dependent conductivity in  $\text{Li}_2\text{O-Na}_2\text{O-P}_2\text{O}_5$  glasses.  
R. CHEN, R. YANG, B. DURAND, A. PRADEL and M. RIBES  
Solid State Ionics, 53-56, 1194-1199 (1992).
- 27 -Structural and electrical properties of glassy analogs to bismuth cuprate based superconductors.  
L. ROBLIN-SEMENE, A. PRADEL, M. RIBES and C. BELOUET  
Mat. Res. Bull., Vol. 27, 1339-1346 (1992).
- 28 -Preparation and characterization of composites "BiSrCaCuO superconductor /  $\text{PbO-B}_2\text{O}_3$  glass".  
L. ROBLIN-SEMENE, A. PRADEL, M. RIBES and C. BELOUET  
Superconductivity: ICMAS-92, Technology Transfer series (Eds A.Niku-Lari, C.W.Chu and J.Fink), p73 (1992).
- 29 -Photoconductivity of PbO doped borosilicate glass prepared by the sol gel process.  
W. GRANIER, K. JABOBKER, A. PRADEL and M. PHAM THI  
J. Non Cryst. Solids, 147-148, 574 (1992).
- 30 -Two new polymorphs of  $\text{SiSe}_2$  : structural investigation by Raman and  $^{29}\text{Si}$  MAS NMR spectroscopies and relationship with the structure of vitreous  $\text{SiSe}_2$ .  
A. PRADEL, V. MICHEL-LLEDOS, M. RIBES and H. ECKERT  
Chem. Mater., 5(3), 377 (1993).
- 31 -Preparation and characterization of composites "Glassy BiSrCaCuO/Crystalline  $\text{BiSrCaCuO}_3$ ".  
L. ROBLIN-SEMENE, A. PRADEL, M. RIBES and C. BELOUET  
Superconducting Materials: ICMAS-93, Technology Transfer series (Eds A.Niku-Lari, J. Etourneau, J.B. Torrance, H. Yamauchi), p377 (1993).
- 32 -Electrochemical characterization of thin films of ionically and mixed conducting glasses.  
A. GUESSOUS, J. SARRADIN, A. PRADEL and M. RIBES  
Solid State Ionics, 70/71, 368-374 (1994).

- 33 -New elaboration of  $\text{Na}_2\text{O-B}_2\text{O}_3\text{-SiO}_2$  glass doped with CdS nanocrystals from gel formed in aqueous solution.  
W. GRANIER, L. BOUDES, A. PRADEL, M. RIBES, J. ALLEGRE, G. ARNAUD,  
P. LEFEBVRE and H. MATHIEU  
J. Sol Gel Sci. Techn., 2, 765-769 (1994).
- 34 -Ion transport in superionically conducting glasses.  
A. PRADEL and M. RIBES  
J. Non Cryst. Solids, 172-174, 1315-1323 (1994).
- 35 -Frequency dependence of conductivity in superionic conducting chalcogenide glasses.  
B. DURAND, G. TAILLADES, A. PRADEL, M. RIBES, J.C. BADOT and  
N. BELHADJ-TAHAR  
J. Non Cryst. Solids, 172-174, 1306-1314 (1994).
- 36 -Structure and optical conductivity of silver thiogermanate glasses.  
E.I. KAMITSOS, J.A. KAPOUTSIS, G.D. CHRYSSIKOS, G. TAILLADES, A. PRADEL and  
M. RIBES  
J. Solid State Chem., 112:2, 255-261 (1994).
- 37 -Original synthesis of II-VI semiconductor nanocrystallites embedded in a sodium borosilicate glass.  
L. BOUDES, J.L. MARC, W. GRANIER, A. PRADEL, M. RIBES, J. ALLEGRE and  
P. LEFEBVRE  
Chimica Chronica, New Series, 23, 163-168 (1994).
- 38 -Novel preparation of CdS nanocrystals in a sodium borosilicate glassy matrix.  
W. GRANIER, L. BOUDES, A. PRADEL, M. RIBES, J. ALLEGRE, G. ARNAUD,  
P. LEFEBVRE and H. MATHIEU  
Material Science Forum : Soft chemistry routes to new materials (eds J. Rouxel,  
M. Tournoux, R. Brec), Vols 152-153, 351 (1994).
- 39 -Préparation et caractérisation de composites "verre-supraconducteur".  
L. ROBLIN-SEMENE, A. PRADEL, M. RIBES and C. BELOUET  
J. Phys. III, 4, 2115-2129 (1994).
- 40 -Preparation of II-VI semiconductor nanocrystallites in a glass matrix using chalcogenizing agent : application to CdSe.  
J.L. MARC, W. GRANIER, A. PRADEL, M. RIBES, T. RICHARD, J. ALLEGRE and  
P. LEFEBVRE  
Mat. Res. Soc. Symp. Proc. Vol 346, 901 (1994).
- 41 - Sol-gel preparation and optical characterization of sodium borosilicate glasses doped with II-VI semiconductor nanocrystals.  
P. LEFEBVRE, T. RICHARD, J. ALLEGRE, H. MATHIEU, A. PRADEL, J.L. MARC,  
L. BOUDES, W. GRANIER and M. RIBES  
SPIE Sol-gel Optics III, Vol. 2288, 163 (1994).
- 42 - Optical properties of II-VI semiconductor nanocrystals produced by sol-gel synthesis in sodium borosilicate glasses.  
P. LEFEBVRE, T. RICHARD, J. ALLEGRE, H. MATHIEU, A. PRADEL, J.L. MARC,  
L. BOUDES, W. GRANIER and M. RIBES  
Superlattices and Microstructures, 15(4), 447, (1994).
- 43 -Quantum confinement effects of CdS nanocrystals in a sodium borosilicate glass prepared by the sol gel process.



- H. MATHIEU, T. RICHARD, J. ALLEGRE, P. LEFEBVRE, G. ARNAUD, W. GRANIER,  
L. BOUDES, J.L. MARC, A. PRADEL and M. RIBES  
J. Appl. Phys. 77(1), 287 (1995).
- 44 -Electrochemical microsensor for the detection of Na<sup>+</sup> ions.  
A. GUESSOUS, J. SARRADIN, P. PAPET, A. PRADEL and M. RIBES  
Sensors and Actuators B 26/27, 360 (1995).
- 45 -<sup>29</sup>Si NMR structural studies of ionically conductive chalcogenide glasses and model compounds.  
A. PRADEL, G. TAILLADES, M. RIBES and H. ECKERT  
J. Non Cryst. Solids 188, 75 (1995).
- 46 -Structure determination of Ag-Ge-S glasses by isotopic substitution neutron diffraction.  
A.P. OWENS, J.H.LEE, A. PRADEL, A.C. HANNON, M. RIBES and S.R. ELLIOTT  
J. Non Cryst. Solids 193, 57 (1995).
- 47 Microcapteurs chimiques à base de membranes ionosensibles vitreuses.  
Ph. PAPET, J. SARRADIN, A. GUESSOUS, M. MILOSHOVA,  
E. BYCHKOV, A. PRADEL et M. RIBES  
Annales de Chimie 20, 429-432 (1995).
- 48 Structure determination of Ag-Ge-S glasses using neutron diffraction.  
J.H. LEE, A.P. OWENS, A. PRADEL, A.C. HANNON, M. RIBES and  
S.R. ELLIOTT  
Phys. Rev. B 54 (6), 3895-3909 (1996).
- 49 <sup>119</sup>Sn solid state nuclear magnetic resonance study of crystalline tin sulphides.  
C. MUNDUS, G. TAILLADES, A. PRADEL and M. RIBES  
Solid State Nuclear Magnetic Resonance 7(2), 141 (1996).
- 50 Ionic and polaronic hopping in glass  
C. CRAMER, K. FUNKE, B. ROLING, T. SAATKAMP, D. WILMER, M.D. INGRAM,  
A. PRADEL, M. RIBES and G. TAILLADES  
Solid State Ionics 86-88, 481 (1996).
- 51 Electrochemical microsensors for the detection of heavy ions in solutions.  
A. PRADEL, F. GENTY, M. MILOSHOVA, V. TSEGELNIK, E. BYCHKOV, P. PAPET,  
J. SARRADIN and M. RIBES  
Thin-Film Solid Ionic Devices and Materials, Proc. 95-22 of the Electrochemical Society (Ed J.  
Bates), 76 (1996).
- 52 The dynamic of silver ions in Ag<sub>2</sub>S-GeS<sub>2</sub> glasses investigated by frequency dependent  
conductivity  
G. TAILLADES, A. PRADEL and M. RIBES  
Proc. of Workshop on Non Equilibrium Phenomena in Supercooled Fluids, Glasses and  
Amorphous Materials (eds M. Giordano, D. Leporini and M. Tosi) World Scientific, 229 (1996).
- 53 Percolation transition in Ag-doped germanium chalcogenide-based glasses :  
conductivity and silver diffusion results.  
E. BYCHKOV, V. TSEGELNIK, Yu. VLASOV, A. PRADEL and M. RIBES  
J. Non-Cryst. Solids 208(1-2), 1 ( 1996).
- 54 New insights of the solid state transformation in the Ag-Ge-Ge system : a mechanical spectroscopy  
study  
S. ETIENNE, G.TAILLADES, A. PRADEL and M. RIBES  
J. Phys. IV, 6, C8, 655 (1996).

- 55 Structural characterization of amorphous  $\text{SiC}_x\text{N}_y$  chemical vapor deposited coatings  
A. BENDEDOUCHE, R. BERJOAN, E. BECHE, T. MERLE-MEJEAN, S. SCHAMM, V. SERIN, G. TAILLADES, A. PRADEL and R. HILLEL  
J. Appl. Phys. 81(9), 6147-6154 (1997)
- 56 Alkaline ion distribution in mixed-alkali chalcogenide glasses :  $^{23}\text{Na}$ - $^7\text{Li}$  spin echo double resonance NMR studies of the system  $\text{Na}_2\text{S-Li}_2\text{S-GeS}_2$ .  
B. GEE, H. ECKERT, A. PRADEL, G. TAILLADES and M. RIBES  
J. Non Cryst. Solids, 215, 32-40 (1997).
- 57 Structural studies of glasses  $(\text{Li}_2\text{S})_{0.5}(\text{SiS}_2)_{0.5}$  by isotopic-substitution neutron diffraction.  
J.H. LEE, A. PRADEL, G. TAILLADES, M. RIBES and S.R. ELLIOTT  
Phys. Rev. B 56 (17), 10934 -10941 (1997).
- 58 Ion dynamics in superionic chalcogenide glasses studied in large frequency and temperature ranges.  
A. PRADEL, G. TAILLADES, C. CRAMER and M. RIBES  
Solid State Ionics 105, 139-148 (1998).
- 59 Non-arrhenius conductivity in glassy and crystallized fast ion conductors. A manifestation of cationic disorder.  
M. RIBES, G. TAILLADES and A. PRADEL  
Solid State Ionics, 105, 159-165 (1998).
- 60 Percolation transition in Ag-doped chalcogenide glasses : comparison of classical percolation and dynamic structure models.  
E. BYCHKOV, A. BYCHKOV, A. PRADEL and M. RIBES  
Solid State Ionics, 113-115, 691-695 (1998).
- 61 Degenerated mixed cation effect in  $\text{CuI-AgI-As}_2\text{S}_3$  glasses :  $^{64}\text{Cu}$  and  $^{110}\text{Ag}$  tracer diffusion studies.  
A. BOLOTOV, E. BYCHKOV, Yu. GAVRILOV, Yu. GRUSHKO, A. PRADEL, M. RIBES, V. TSEGELNIK and Yu. VLASOV  
Solid State Ionics, 113-115, 697-701 (1998).
- 62 Mixed glass former effect in the system  $0.3\text{Li}_2\text{S-0.7}[(1-x)\text{SiS}_2-x\text{GeS}_2]$  : a structural explanation.  
A. PRADEL, Ch. RAU, D. BITTENCOURT, P. ARMAND, E. PHILIPPOT and M. RIBES  
Chemistry of Materials, 10 (8), 2162-2166 (1998).
- 63 Chemical microsensors based on chalcogenide glasses for the detection of cadmium ions in solution.  
A. GUESSOUS, J. SARRADIN, Ph. PAPET, K. ELKACEMI, S. BELKADI, A. PRADEL and M. RIBES  
Sensors and Actuators B, 53, 13-18 (1998).
- 64 Preparation and characterization of Si nanocrystallites embedded in a silica matrix.  
M. PAUTHE, E. BERNSTEIN, J. DUMAS, L. SAVIOT, A. PRADEL and M. RIBES  
J. Mater. Chem., 9, 187-191 (1999).
- 65 Tracer and surface spectroscopy studies of sensitivity mechanism of mercury ion chalcogenide glass sensors,  
M. MILOSHOVA, E. BYCHKOV, V. TSEGELNIK, V. STRYKANOV, H. KLEWE-NEBENIUS, M. BRUNS, W. HOFFMANN, Ph. PAPET, J. SARRADIN, A. PRADEL and M. RIBES,  
Sensors and Actuators B57, 171-178 (1999).

- 66 ISE and ISFET microsensors based on a sensitive chalcogenide glass for copper ion detection in solution,  
G. TAILLADES, O. VALLS, A. BRATOV, C. DOMINGUEZ, A. PRADEL and M. RIBES,  
Sensors and Actuators B59, 123-127 (1999).
- 67 Chemical microsensors based on vitreous membranes for copper ion detection in solution  
G. TAILLADES, N. ABRAMOVA, A. BRATOV, C. DOMINGUEZ, J. SARRADIN, P. PAPET,  
E. BYCHKOV, M. MILOSHOVA, A. PRADEL, M. RIBES.  
Solid State Chemical and Biochemical Sensors in Advances in Science and Technology, Vol. 26,  
P. Vincenzini and L. Dori Eds., Techna, Faenza, (1999). ISBN.88-86538-27-8, pp. 103-110.
- 68 Ion dynamics in superionic chalcogenide glasses : complete conductivity spectra  
R. BELIN, G. TAILLADES, A. PRADEL and M. RIBES  
Solid State Ionics 136-137, 1025 (2000).
- 69 Single-mode waveguides in thermal infrared wavelengths for spatial interferometry  
E. LAURENT, I. SCHANEN, P. KERN, A. PRADEL and A. AGGAD  
Proc. 4<sup>ème</sup> ICSO colloque International sur l'Optique Spatiale 5-7 decembre 2000, Toulouse  
(France) 497-505.
- 70 Mixed cation effect in chalcogenide glasses  $Rb_2S-Ag_2S-GeS_2$   
C. RAU, P. ARMAND, A. PRADEL, C.P.E. VARSAMIS, E.I. KAMITSOS, D. GRANIER, A.  
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