Part A. PERSONAL INFORMATION

First name	ALFONSO		
Last name	BRAVO LEON		
Gender	Male	Birth date (dd/mm/yy)	
Social Security, Passport, ID number			
e-mail		URL Web	
Researcher Identification number	Researcher ID	H-1291-2015	
	Orcid code	0000-0001-7399-5190	

A.1. Current position

Position	Associate professor		
Initial date	2001		
Institution	University of Sevilla		
Department/Center	Condensed Physics Department/Physics Falculty		
Country	Spain	Phone number	
Key words	Ceramic materals, Tough ceramics, Functional materials, Biomimmetic materials		

A.2. Previous positions

Period	Position/Institution
1989-1996	Research Assistant/Universidad de Sevilla
1997	Postdoctoral Fellow/Penn State University
1998-2001	Assistant Professor/Universidad de Sevilla

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
Licenciatura (BS) in Physics	Universidad de Sevilla/Spain	1989
Doctor (PhD) in Physics	Universidad de Sevilla/Spain	1995

Parte B. CV SUMMARY

Member of the research group of Mechanical Properties of Solids at Universidad de Sevila from 1989 to 2007.
Member of the research group of Biomimmetic and Multifunctional Materials at Universidad de Sevilla from 2007 until now.

Part C. CV SUMMARY

Main research lines:

- Development of tough ceramics in the system ZrO2-Y2O3.

Materials based in zirconium oxide stabilized with yttrium oxide in its tetragonal phase show excelent mechanical properties at room properties which make them ideal for applications in agresive environments. Fine grained polycristalline materials in this system exhibit superplastic behavour at high temperatures which pertains the achievement of high strains without developing damage.

- Development of techniques of mechanical characterization (measurement of creep parameters) by means of stress relaxation tests at high temperatures.

Employing this kind of tests the parameters that characterize the plastic behaviour of the materials can be measured in a wide range of stresses and strain rates in a single mechanical test at constant temperature in which the evolution of the load is registered under conditions of constant total deformation. This technique has been applied to the study of superplastic ceramic materials in the system ZrO2-CuO.

- Development and optimization of fabrication routes for obtaining biomimmetic silicon carbide from vegetable pirolized preforms (carbon source) infiltrated at high temperature with molten silicon in non oxidizing atmosphere.

As a result a material is obtained with a SiC matrix that mimmics the structure of the original wood and with the pores completely filled with silicon. Variations in the infiltration process combines with chemical etching allow to obtain dense or porous structures with excellent mechanical properties.

- Fabrication of biomimmetic ceramic-metal composite materials by means of infiltration of vegetable pirolized preforms with mixtures silicon-metal.

As a result of this processing route a composite material is obtained with a SiC ceramic matrix and a second silicon/metal phase (metal = Al, Ti, Cu) with controlled properties. The adition of the metal has great influence in the fabrication conditions of these materials (lowering the infiltration temperature in the system Si-Al), improvents in the final densities of the final materials and mechanical properties: increase in the mechanical resistance or in the fracture toughness. Additionally, adjusting the metal phase proportion in the infiltration melt allows controlling other properties like the expansion coefficient.

The development of the previous research lines have produced the realization of three PhD thesis:

- Microestructura y propiedades mecánicas a alta temperatura de compuestos de circona-niquel. A. Morales Rodríguez (2004).
- Fabricación, características y propiedades mecánicas del SIC biomórfico obtenido a partir de paneles de fibra de madera de densidad medi. M. A. Bautista (2014).
- Fabricación y caracterización de materiales biomiméticos compuestos cerámico-metal, J. V. Barbosa García (2016).

and numerous contributions to conferences and journals as pointed out in the remaining.

Part C. RELEVANT MERITS

C.1. Publicacions. Relevant publications:

1. Morales Rodríguez, A,, Bravo Leon, A., Jimenez Melendo, M., Dominguez Rodriguez, A., High-Temperature Plastic Behavior of TZP-Ni Cermets. Journal of the American Ceramic Society. 2008. Vol. 91. Núm. 2. Pag. 500-507.

2. Morales Rodríguez, A., Richter, G., Rühle, M., Bravo Leon, A., Dominguez Rodriguez, A., Microstructural Characteristics of TZP/NI Cermets Plastically Deformed At High Temperature. Journal of the European Ceramic Society. 2007. Vol. 27. Núm. 4. Pag. 2053-2059.

3. Morales Rodríguez, A., Bravo Leon, A., Richter, G., Rühle, M., Dominguez Rodriguez, A., Influence of Oxidation on the HighTemperature Mechanical Properties of Zirconia/Nickel Cermets. Scripta Materialia. 2006. Vol. 54. Núm. 12. Pag. 2087-2090.

4. Morales Rodríguez, A., Bravo Leon, A., Jimenez Melendo, M., Dominguez Rodriguez, A., High Temperature Plastic Behavior of Reaction Bonded CuO and TiO2 Co-Doped Al2O3. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing. 2004. Vol. 387-389. Pag. 618-622.

5. Morales Rodríguez, A., Bravo Leon, A., Dominguez Rodriguez, A., López Esteban, S., Moya, J. S., High-Temperature Mechanical Properties of Zirconia/Nickel Composites. Journal of the European Ceramic Society. 2003. Vol. 23. Núm. 15. Pag. 2849-2856.

6. Morales Rodríguez, A., Bravo Leon, A., Jimenez Melendo, M., Dominguez Rodriguez, A., High Temperature Stress Relaxation in Ti- and Cu-Doped Reaction Bonded Al2O3. Journal of the European Ceramic Society. 2002. Vol. 22. Núm. 14-15. Pag. 2641-2645.

7. Bravo Leon, A., Morikawa, Y., Kawahara, M., Mayo, M. J. Fracture Toughness of Nanocrystalline Tetragonal Zirconia With Low Yttria Content. Acta Materialia. 2002. Vol. 50. Núm. 18. Pag. 4555-4562.

8. Bravo Leon, A., Jimenez Melendo, M., Dominguez Rodriguez, A., Superplastic Flow of Fine-Grained Yttria-Stabilized Zirconia Polycrystals: Constitutive Equation and Deformation Mechanisms. Journal of the American Ceramic Society. 1998. Vol. 81. Núm. 11. Pag. 2761-2776.

9. Dominguez Rodriguez, A., Bravo Leon, A., Jimenez Melendo, M., Ye, J., Grain Size and Temperature Dependence of the Threshold Stress for Superplastic Deformation in Yttria-Stabilized Zirconia Polycrystals. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing. 1998. Vol. A247. Núm. 1-2. Pag. 97-101

10. Bravo Leon, A., Chokshi, A. H., Jimenez Melendo, M., Dominguez Rodriguez, A., The Role of a Threshold Stress in the Superplastic Deformation of Fine-Grained Yttria-Stabilized Zirconia Polycrystals. Scripta Materialia. 1996. Vol. 34. Núm. 7. Pag. 1155-1160

C.2. Congress. Relevant contributions.

1. Bautista, M. A., Ramirez de Arellano Lopez, A., Bravo Leon, A., Martinez Fernandez, J. Optimization of the Fabrication Route of Biomorphic Sic from Engineered Wood. Novel and Emerging Ceramics and Composites. Kona, Hawaii, EEUU. 2006.

2. Morales Rodríguez, A., Pecharromán, C., López Esteban, S., Esteban, F., Bravo Leon, A. ANOMALOUS CREEP BEHAVIOUR OF TZP-Ni NANOCOMPOSITES. Micromechanics and Microstructure Evolution: Modeling, Simulation and Experiments. 2005.

3. Martinez Fernandez, J., Ramirez de Arellano Lopez, A., Varela Feria, F. M., Bravo Leon, A., Singh, M., Fabrication and Microstructure-Mechanical Property Correlation in Ecoceramics Derived from Biocarbon Templates. 5th International Conference on High-Temperature Ceramic Matrix Composites. Seattle , Washington, Estados Unidos. 2004.

4. Morales Rodríguez, A., Bravo Leon, A., Jimenez Melendo, M., Dominguez Rodriguez, A., Creep of 3YTZP/Ni Composites. 8th International Conference on Superplasticity in Advanced Materials. 2003

5. Morales Rodríguez, A., Bravo Leon, A., Jimenez Melendo, M., Dominguez Rodriguez, A., High-Temperature Plastic Behavior of Reaction Bonded CuO and TiO2-Codoped

Al2O3. 13th International Conference on the Strength of Materials. Budapest (Hungary). 2003

C.3. Research Proyects

1. Filtros Bio-Cerámicos para Partículas en Motores Diesel (MAT2013-41233-R - Researcher
2. Microestructura y Deformación Plástica a Alta Temperatura de Óxidos Eutécticos Basados en Al2O3. Superplasticidad. (MAT2009-13979-C03-01 - Researcher)
3. Bioener: Aplicación de Tecnologías Biomiméticas a Sistemas Energéticos (P09-TEP5152 - Researcher)
4. Optimización de cerámicas SiC biomórfico para su uso como soporte tejidos biológicos (P06-FQM-01591 - Researcher)
5. Materiales nanoestructurados: monolíticos y compuestos cerámica metal (MAT200304199-C02-02 - Researcher)
6. Structural ceramics and ceramic composites for high-temperature applications (SCCC2001) (HPCF-CT-2001-00328 - Researcher)
7. Caracterización microestructural y propiedades mecánicas a altas temperaturas de compuestos de alúmina fabricados mediante unión por reacción (RBAO) (MAT20001117 - Researcher)