American University of Sharjah

Resume

FULL NAME: Juan M. Sanchez **TITLE**: Provost and Chief Academic Officer

CITIZENSHIP: U.S.A.

EDUCATION:
University of Cordoba, Argentina, Physics, Bachelor of Science, 1972
University of California at Los Angeles, Materials Science, Master of Science, 1974
University of California at Los Angeles, Materials Science, Doctor of Philosophy, 1977

CURRENT AND PREVIOUS ADMINISTRATIVE POSITIONS:
Associate Vice President for Research, The University of Texas at Austin, 1995-1998
Vice President for Research *ad interim*, The University of Texas at Austin, 1998-1999
Vice President for Research, The University of Texas at Austin, 1999-2016
Interim Senior Vice President for Research, University of Texas Rio Grande Valley, 2017-2018
Provost and Chief Academic Officer, American University of Sharjah, UAE, 2019-present

CURRENT AND PREVIOUS ACADEMIC POSITIONS:
University of California at Los Angeles, Research Associate, Materials Science and Engineering, 1977-79
University of Sao Paulo, Brazil, Visiting Professor, Department of Physics, 1979
University of California at Berkeley, Research Associate, Materials Science and Mineral Engineering, 1980-81
Columbia University, Assistant Professor, School of Engineering and Applied Science, 1981-85
Columbia University, Associate Professor, School of Engineering and Applied Science, 1985-87
Columbia University, Professor, School of Engineering and Applied Science, 1987-89
The University of Texas at Austin, Professor, Mechanical Engineering, 1989-2018
American University of Sharjah, Professor of Mechanical Engineering, 2019-present

OTHER PROFESSIONAL HIGHLIGHTS
Reviewer, *Physical Review B*
Reviewer, *Physical Review Letters*
Reviewer, *Journal of Physics: Condensed Matter*
Reviewer, *Physical Review*
Reviewer, *Philosophical Magazine*
Reviewer, *Journal of Phase Equilibria*
Associate Editor, *Journal of Phase Equilibria, 1997- present*

MEMBERSHIPS IN PROFESSIONAL AND HONORARY SOCIETIES:
Member, The Minerals, Metals and Materials Society
Member, The American Physical Society
Member, The Materials Research Society
Member, Sigma Chi Research Society
Member, The Japan Institute of Metals

PROFESSIONAL SOCIETY AND MAJOR GOVERNMENTAL COMMITTEES
Member, Committee on Alloy Phases, The Minerals, Metals and Materials Society, 1985-1992

Member, Committee on Computer Simulation and Analysis of Complex Materials Phenomena, National Materials Advisory Board, National Research Council, 1987-1988
Member, Review Panel, Fossil Energy Advanced Research Peer Review, Department of Energy, Knoxville, TN, 1990
Member, Steering Committee of the Electronic, Magnetic and Photonic Materials Division, The Minerals, Metals and Materials Society, 1990-1992
Chairman, Committee on Alloy Phases, The Minerals, Metals and Materials Society, 1990-1992
Member, Executive Committee of the Structural Materials Division, The Minerals, Metals and Materials Society, 1990-1992
Member, Acta Metallurgica Gold Medal and Hume-Rothery Award Committee, The Minerals, Metals and Materials Society, 1993-1996
Member, International Junior Investigator and Postdoctoral Advisory Review Panel, National Science Foundation, 1995
Member, Board of Directors, Texas Society for Biomedical Research, 1995-1997
Member, Texas Research University Forum, 1998-2002
Member, Council of Federal Relations, Association of American Universities, 1998-present
University-Industry Partner, Government-University-Industry Research Roundtable, National Academies, 1999-present
Member, Board of Directors, Associated Western Universities, Inc., 1999-2001
Trustee, Associated Western Universities, 2001-2003
Member, Board of Directors, Austin Chamber of Commerce, 1999-2003
Member, Board of Directors, Austin Technology Council, 1998-2004
Councilor, Oak Ridge Associated Universities, 2000-2005
Council Vice Chair, Oak Ridge Associated Universities, 2005-2007
Member, Institutional Oversight Board Member for the National Partnership for Advanced Computing Infrastructure (NPACI), 2000-2005.
Member, Board of Visitors, US Army War College, 2000-2004
Member, Visiting Committee on Advanced Technology of the National Institutes of Standards and Technology, 2000-2006
Chair, Visiting Committee on Advanced Technology of the National Institutes of Standards and Technology, 2002-2003
Member, Board of Directors, Oak Ridge Associated Universities, 2003-2009 and 2015-present
Member, International Advisory Board, Universidad Autonoma de Nuevo Leon, 2004-present
Member, Board of Advisors, Jackson State University College of Science, Engineering and Technology, 2005-2007
Member, FutureGen Texas Advisory Board, State of Texas, 2005-2007
Member, National Scientific and Policy Advisory Council for the Hogg Foundation for Mental Health, 2006-2015
Member, Committee on Science, Engineering, and Public Policy (COSEPP) of the American Association for the Advancement of Science (AAAS) 2008-2012

JOURNAL EDITORSHIPS AND EDITORIAL BOARDS:
Associate Editor, *Journal of Phase Equilibria,* 1990-present
Advisor, *Journal of Metals*, 1992-1994
Member, Editorial Board, *Journal of Intermetallics,* 1992-1996.
Member, Editorial Board, *Methods in Materials Research,* John Wiley, 1996-present

CONFERENCES ORGANIZED/CHAIRED:
Director, *Adriatico Research Conference on Structural and Phase Stability of Alloys*, Trieste, Italy, 1991

Organizer, *Nanophases and Nanocrystalline Structures*, The Minerals Metals and Materials Society, San Diego, CA, 1992
Organizer, *Hume-Rothery Symposium*, The Minerals Metals and Materials Society, San Diego, CA, 1992
Director, *First U.S.A.-Mexico Symposium on Materials Science and Engineering*, Ixtapa, Mexico, 1992
Organizer, *Symposium on Nanocrystalline Materials,* The Minerals Metals and Materials Society, Denver, CO, 1993
Organizer, *Hume-Rothery Symposium*, The Minerals Metals and Materials Society, Denver, CO, 1993
Chair, *Issues and Topics in Materials Theory: Theory of Materials Properties,* The Materials Research Society, San Francisco, CA, 1993
Chair, *Second Latin-American Workshop on Magnetism, Magnetic Materials and Their Applications*, Guanajuato, Mexico, 1993
Organizer, *Interfacial Phases, Structures and Properties*, The Minerals Metals and Materials Society, Rosemont, Il, 1994
Group Leader, *Workshop on Thermodynamic Models and Data for Pure Elements, and other End-Member Solutions,* Schlob Ringberg, Germany, 1995
Organizer, *Trilateral Workshop on Materials Science*, Saltillo, Mexico, 1995
Chair, *Materials Focussed Sessions: Theory of Materials*, The American Physical Society, San Jose, CA, 1995
Organizer, *International Workshop on the Theory and Applications of the Cluster Variation and Path Probability Methods*, San Juan, Teotihuacan, Mexico, 1995
Director, *First U.S.-Argentina Bilateral Symposium on Materials Science and Engineering,* Buenos Aires, Argentina, 1995
Organizer, *Symposium on Alloy Modeling and Design II*, The Minerals Metals and Materials Society, Cleveland, OH, 1995
Organizer, *Symposium on the Theory of Materials, International Symposia on Advanced Materials and Technology for the 21st Century*, Honolulu, HI, 1995
Group Leader, *Workshop on the Thermodynamic Modeling of Solutions and Alloys,* Schlob Ringberg, Germany, 1996
Director, *Workshop on the Modification, Characterization and Modeling of Surfaces,* Buenos Aires, Argentina, 1997
Chair, *Superconducting Materials*, XIV International Materials Research Congress, Cancun, Mexico, 2005.

UNIVERSITY COMMITTEES/ADMINISTRATIVE ASSIGNMENTS:
Member, Budget Council, Mechanical Engineering, 1989-present
Member, Computer Committee, Mechanical Engineering, 1991-1993
Chair, Budget Council Productivity Committee, Mechanical Engineering, 1991-1992
Member, Undergraduate Advising and Retention Committee, 1991-1993
Member, Teaching Load Committee, Mechanical Engineering, 1991-1995
Member, Space Committee (ex-officio), Mechanical Engineering, 1991-1994
Member, Executive Committee, Mechanical Engineering, 1991-1994
Associate Chairman for Research, Mechanical Engineering, 1991-1994
Member, J.K. Tien Memorial Resolution Committee, 1992
Member, Graduate Student Recruitment Committee, 1992-1993
Chairman, Graduate Studies Committee (MS&E), College of Engineering, 1993-1999
Member, Research Safety Advisory Committee, 1995-1998
Member, Radiation Safety Committee, 1995-present
Chairman, RISE Committee, 1995-1998
Member, Environmental Health and Safety Advisory Committee, 1996-1998
Member, Computer and Information Technology Users Policy Committee, 1996-1998

Member, Intellectual Property Committee, 1995-1998
Member, Year 2000 Steering Committee, 1997-2000
Member, Executive Compliance Committee, 2006 – present
Co-Chair, Research Steering Safety Steering Committee, 2012-present

PUBLICATIONS:

A. Refereed Archival Journals

1. Murakami, M., De Fontaine, D., Sanchez, J.M., and Fodor, J., "Diffusion in AgAuPd Thin Film Microcouples," *Acta. Metall. Mater.* **22,** 709-719, 1974.
2. Sanchez, J.M. and De Fontaine, D., "Structural Model for the Omega Phase Transformation," *J. Appl Cryst.* **10**, 220-227, 1975.
3. Sanchez, J.M. and De Fontaine, D., "Model for Anomalous Self-Diffusion in Group IV-B Transition Metals," *Phys. Rev. Lett*. **35,** 227-230, 1975.
4. Murakami, M., De Fontaine, D., Sanchez, J.M., and Fodor, J., "Ternary Diffusion in Multilayer AgAuCu Thin Films," *Thin Solid Films* **25,** 465-482, 1975.
5. Sanchez, J.M. and De Fontaine, D., "The Omega Phase Transformation," *J. Phys. (Paris)* **38**, C7-444 452, 1977.
6. Sanchez, J.M., and De Fontaine, D., "Anomalous Diffusion in Omega Forming Systems," *Acta. Metall. Mater.* **26**, 1083-1095, 1978.
7. Sanchez, J.M., and De Fontaine, D., "The fcc Ising Model in the Cluster Variation Approximation," *Phys. Rev. B* **17,** 2926-2936, 1978.
8. Kikuchi, R., Sanchez, J.M., De Fontaine, D., and Yamauchi, H., "Theoretical Calculation of the CuAgAu Coherent Phase Diagram," *Acta. Metall. Mater.* **28**, 651-666, 1980.
9. Sanchez, J.M. and De Fontaine, D., "Ordering in fcc Lattices with First and Second-Neighbor Interactions," *Phys. Rev. B* **21**, 216-228, 1980.
10. Craievich, A. and Sanchez, J.M., "Dynamical Scaling in the Glass System B_2O_3-PbO-Al_2O_3," *Phys. Rev Lett.* **47**, 1308-1312, 1981.
11. Sanchez, J.M., "On the Analysis of Diffusion Anomalies in Titanium Alloys," *Phil. Mag. **A*** **43**, 1407-1417, 1981.
12. Sanchez, J.M., De Fontaine, D., and Teitler, W., "Comparison of Aroximate Methods for the Study of Antiferromagnetism in the FCC Lattice," *Phys. Rev. **B*** **26**, 1465-1468, 1982.
13. Gratias, D., Sanchez, J.M., and De Fontaine, D., "Application of Group Theory to the Calculation of the Configurational Entropy in the Cluster Variation Method," *Physica **A*** **113**, 315-337, 1982.
14. Sanchez, J.M., Gratias, D., and De Fontaine, D., "Special Point Ordering in General Crystal Structures," *Acta Crystallogr. **A*** **38**, 214-221, 1982.
15. Sanchez, J.M., "Pair Correlations in the Cluster Variation Approximation," *Physica **A*** **111**, 200-216, 1982.
16. Sanchez, J.M. and De Fontaine, D., "Ising Model Phase Diagram Calculations in the fcc Lattice with First and Second-Neighbor Interactions," *Phys. Rev. B* **25**, 1759-1765, 1982.
17. Bras, S., Craievich, A., Sanchez, J.M., Williams, C., and Zanotto, E.D., "SAXS Study of Phase Separation in Glasses Using a New Position Sensitive Detector," *Nucl. Instrum. Meth.* **208**, 489-494, 1983.
18. Sanchez, J.M., Ducastelle, F., and Gratias, D., "Generalized Cluster Description of Multicomponent Systems," *Physica* **128A**, 334-350, 1984.
19. Sanchez, J.M., Barefoot, J.R., Jarrett, R.N., and Tien, J.K., "Modelling of Phase Equilibrium in the NickelAluminum System," *Acta. Metall. Mater.* **32**, 1519-1525, 1984.
20. Sigli, C. and Sanchez, J.M., "Calculation of Temperature-Concentration Diagrams by the CV Method with Lennard-Jones Pair Interactions," *CALPHAD* **8**, 221-231, 1984.

21. Sanchez, J.M. and Lin, C.H., "Modeling of Magnetic and Chemical Ordering in Binary Alloys," *Phys. Rev. B* **30**, 1448-1453, 1984.
22. Dahmani, C.E., Cadeville, M.C., Sanchez, J.M., and Moran-Lopez, J.L., "The Ni-Pt Phase Diagram: Experiment and Theory," *Phys. Rev. Lett* **. 55**, 1208-1212, 1985.
23. Sanchez, J.M. and Moran-Lopez, J.L., "Cluster Method Study of Surface Effects in fcc Binary Alloys," *Phys. Rev. B* **32**, 3534-3540, 1985.
24. Mohri, T., Sanchez, J.M., and De Fontaine, D., "Short Range Order Diffuse Intensity Calculations in the Cluster Variation Approximation," *Acta. Metall. Mater.* **33**, 1463-1476, 1985.
25. Sanchez, J.M. and Moran-Lopez, J.L., "Ordering and Segregation at (001) Surfaces in Cu_3Au," *Surface Sci.* **157**, L297-L302, 1985.
26. Hawkins, R.J., Robbins, M.O., and Sanchez, J.M., "A Microscopic Theory of Binary Alloy Phase Equilibrium," *Solid State Commun.* **55**, 253-256, 1985.
27. Mohri, T., Sanchez, J.M., and De Fontaine, D., "Binary Ordering Prototype Phase Diagrams in The Cluster Variation Approximation," *Acta. Metall. Mater.* **33**, 1171-1185, 1985.
28. Sigli, C. and Sanchez, J.M., "Theoretical Description of Phase Equilibrium in Binary Alloys," *Acta. Metall. Mater.* **33**, 1097-1104, 1985.
29. Sigli, C., Kosugi, M., and Sanchez, J.M., "Calculation of Thermodynamic Properties and Phase Diagrams of Binary Transition Metal Alloys," *Phys. Rev. Lett.* **57**, 253-256, 1986.
30. Sanchez, J.M., Mejia-Lira, F., and Moran-Lopez, J.L., "Finite Size Effects on First Order Phase Transitions: fcc Binary Alloys," *Phys. Rev. Lett.* **57**, 360-363, 1986.
31. A. F. Craievich, Sanchez, J.M., and Williams, C., "Phase Separation and Dynamical Scaling in Borate Glasses," *Phys. Rev. B* **34**, 2762-2769, 1986.
32. Papazian, J.M., Sigli, C., and Sanchez, J.M., "New Evidence for GP Zones in Binary Al-Li Alloys," *Scr. Metall. Mater.* **20**, 201-206, 1986.
33. Moran-Lopez, J.L. and Sanchez, J.M., "Cluster Method Study of Phase Separation In He^3-He^4 Mixtures," *Phys. Rev. B* **33**, 5059-5061, 1986.
34. Hawkins, R.J., Robbins, M.O., and Sanchez, J.M., "Electronic Structure Calculations of Binary Alloy Phase Diagrams," *Phys. Rev. B* **33**, 4782-4792, 1986.
35. Sigli, C. and Sanchez, J.M., "Calculation of Phase Equilibrium in Al-Li Alloys," *Acta. Metall. Mater.* **34**, 1021-1028, 1986.
36. Mohri, T., De Fontaine, D., and Sanchez, J.M., "Short Range Order Hardening with Second Neighbor Interactions in fcc Solid Solutions," *Met. Trans.* **17A**, 189-194, 1986.
37. Sanchez, J.M. and Moran-Lopez, J.L., "Surface First-Order Phase Transitions in fcc Ising Ferromagnets," *Phys. Rev. Lett.* **58**, 1120-1122, 1987.
38. Sanchez, J.M., Moran-Lopez, J.L., Leroux, C., and Cadeville, M.C., "Magnetic Properties and Chemical Ordering in CoPt," *J. Phys.: Condens. Matter* **1**, 491-496, 1989.
39. Contreras-Solarios, D.A., Mejia-Lira, F., Moran-Lopez, J.L., and J. M. Sanchez, "A Study of Magnetic Phases of BCC Binary Alloys," *J. Phys. (Paris)* **49**, C8-105-106, 1988.
40. Sanchez, J.M., Moran-Lopez, J.L., Leroux, C., and Cadeville, M.C., "Chemical and Magnetic Ordering in CoPt," *J. Phys. (Paris)* **49**, C8-107-108, 1988.
41. Contreras-Solarios, D.A., Mejia-Lira, F., Moran-Lopez, J.L., and Sanchez, J.M., "Modeling of Phase Diagrams for BCC Magnetic Alloys," *Phys. Rev. B* **38**, 4955-4962, 1988.
42. Sanchez, J.M., Mejia-Lira, F., and Moran-Lopez, J.L., "Oxygen Order-Disorder Transition in the Superconductor $YBa2Cu3O_{6+\delta}$," *Phys. Rev. B* **37**, 3678 -3680, 1988.
43. Sanchez, J.M. and Moran-Lopez, J.L., "Surface Ferromagnetism in Close-Packed Structures," *Surface Sci.* **198**, L299-306, 1988.
44. Hawkins, R.J., and Sanchez, J.M., "Ferromagnetism and Chemical Ordering In Cobalt-Iron," *J. Phys. F* **18**, 767-777, 1988.

45. Carlsson, A.E. and Sanchez, J.M., "Phase Diagrams and Thermodynamic Properties of Ni-Al Alloys: A Non-Empirical Evaluation," *Solid State Commun.* **65**, 527-530, 1988.
46. Sigli, C. and Sanchez, J.M., "Electronic Structure Calculation of Ordering and Segregation Energies of Transition Metal Alloys," *Acta. Metall. Mater.* **36**, 367-375, 1988.
47. Tso, N.C. and Sanchez, J.M., "Thermodynamic Modeling of Site Occupation in the γ' Phase of Ni-Al-Hf System," *Mat. Sci. Eng. A* **108**, 159-164, 1989.
48. Sanchez, J.M., Moran-Lopez, J.L., Leroux, C., and Cadeville, M.C., "Magnetic Properties and Chemical Ordering in CoPt," *J. Phys. C: Condens. Matter* **1**, 491-496, 1989.
49. Kosugi, M. and Sanchez, J.M., "Structural Energies and Phase Stability in Ni-Cr Alloys," *Bull. of Alloy Phase Diagrams* **10**, 319-326, 1989.
50. Moran-Lopez, J.L. and Sanchez, J.M., "Boundary Condition Effects on the Surface Magnetization of Ising Ferromagnets," *Phys. Rev. B* **39**, 9746-9748, 1989.
51. Wu, Y.P., Tso, N.C., Sanchez, J.M., and Tien, J.K., "Modeling of Ternary Site Occupation in $L1_2$ Ordered Intermetallics," *Acta. Metall. Mater.* **37**, 2835-2840, 1989.
52. Tso, N.C., Kosugi, M., and Sanchez, J.M., "The Effect of the Structural Energy of Cr in the Ni-Cr Equilibrium Phase Diagram," *Acta. Metall. Mater.* **37**, 121-127, 1989.
53. Contreras-Solarios, D.A., Mejia-Lira, F., Moran-Lopez, J.L., and Sanchez, J.M., "Modeling of the Fe-Al Phase Diagram," *Phys. Rev. B* **38**, 11481-11485, 1988.
54. Kosugi, M., Tso, N.C., and Sanchez, J.M., "First Principles Calculation of the Ni-Cr Phase Diagram," *Solid State Ionics* **32/33**, 714-720, 1989.
55. Mc Rae, E.G., Buck, T.M., Malic, R.A., Wallace, W.E., and Sanchez, J.M., "Ordering and Layer Composition at the $Cu_3Au(110)$ Surface," *Surf. Sci. Lett.* **238**, L481-485, 1990.
56. Sanchez, J.M., Stark, J.P., and Moruzzi, V.L., "First-Principles Calculation of the Ag-Cu Phase Diagram," *Phys. Rev. B* **44**, 5411-5418, 1991.
57. Sanchez, J.M. and Moran-Lopez, J.L., "Pseudo-Three Dimensional Model of Oxygen Ordering in $YBa_2Cu_3O_{6+\delta}$," *Solid State Commun.* **79**, 151-154, 1991.
58. Mohri, T., Terakura, K., S. Takizawa and Sanchez, J.M., "First-principles Study of Short-Range Order and Instabilities in Au-Cu, Au-Ag and Au-Pd Alloys," *Acta. Metall. Mater.* **39**, 493-501, 1991.
59. Mohri, T., Sugawara, Y., Watanabe, K., and Sanchez, J.M., "Synthesis of Phase Equilibria and Nonequilibria by CVM and M," *Mater. Trans JIM* **33**, 558-564, 1992.
60. Gyurko, A.M., Vignoul, G.E., Tien, J.K., and Sanchez, J.M., "Understanding the High Temperature Deformation Behavior of an Ordered Ir_3Zr Intermetallic Compound," *Metallurgical Transactions* **24A**, 3073-3076, 1992.
61. Cadeville, M.C., Pierron-Bohnes, V., and Sanchez, J.M., "Modeling of the Electrical Resistivity of Ferromagnetic and Paramagnetic Intermetallic Compounds," *J. Phys.: Condens. Matter* **4**, 9053-9066, 1992.
62. Thomas, W.A., Ko, M.W., and Sanchez, J.M., "Stress-Strain Behavior of Nicalon-Fiber-Reinforced Calcium Aluminosilicate Composites under Tensile Fatigue Conditions," *J. Am. Ceram. Soc.* **76**, 2175-2179, 1993.
63. Cadeville, M.C., Pierron, V.,-Bohnes, L. Bouzidi, and Sanchez, J.M., "Thermodynamic, Electronic and Magnetic Properties of Intermetallic Compounds Through Statistical Models," *Phys. Scr.* **T49**, 364-372, 1993.
64. Sanchez, J.M., "Cluster Expansion and the Configurational Energy of Alloys," *Phys. Rev. B* **48**, 13-15, 1993.
65. Moran-Lopez, J.L., Aguilera-Granja, F., and Sanchez, J.M., "First-Order Phase Transitions in the Ising Square Lattice With First- and Second-Neighbor Interactions," *Phys. Rev. B* **48**, 3519-3522, 1993.
66. Barth, E.P. and Sanchez, J.M., "Observation of a New Phase in the Niobium-Aluminum System," *Scr. Met. Mater.* **28**, 1347-1352, 1993.

67. Gyurko, A.M. and Sanchez, J.M., "Characterization of Mechanical Properties in the Ir-Nb-Zr Intermetallic System," *J. Mater. Sci.* **A170**, 169-175, 1993.
68. Vignoul, G.E., Tien, J.K., and Sanchez, J.M., "Characterization of the Deformation Behavior of the Cr_2Nb Ordered Intermetallic System," *J. Mater. Sci.* **A170**, 177-183, 1993.
69. Becker, J.D. and Sanchez, J.M., "First Principles Phase Stability Study of the Ru-Nb-Zr System," *J. Mater. Sci.* **A170**, 161-167, 1993.
70. Moran-Lopez, J.L. and Sanchez, J.M., "The Phase Diagram of Oxygen Ordering in $YBa_2Cu_3O_{6+\delta}$," *Physica* **C 210**, 401-407, 1993.
71. J. L. Moran Lopez, F. Aguilera-Granja and Sanchez, J.M., "Phase Transitions in Ising Square Antiferromagnets with First and Second Neighbor Interactions," *J. Phys.: Condens. Matter* **6**, 9759-9772, 1994.
72. Craievich, P.J., Weinert, M., Sanchez, J.M., and Watson, R.E., "Local Stability of Non-Equilibrium Phases," *Phys. Rev. Lett.* **72**, 3076-3079, 1994.
73. Cenedese, P., Sanchez, J.M., and Kikuchi, R., "Continuous Sequence of Mean-Field Approximations and Critical Phenomena," *Physica A* **209**, 257-267, 1994.
74. Sanchez, J.M. and Becker, J.D., "The Role of the Cluster Variation Method in the First Principles Calculation of Phase Diagrams," *Prog. Theor. Phys. Sul.* **115**, 131-145, 1994.
75. Pierron-Bohnes, V., Kentzinger, E., Cadeville, M.C., Sanchez, J.M., Caudron, R., Solal, F., and Kozubski, R., "Experimental Determination of Pair Interactions in a FeV Single Crystal," *Phys. Rev. B*., **51**, 5760-5767, 1995.
76. Sanchez, J.M., Pierron-Bohnes, V., and Mejia-Lira, F., "Reciprocal Space Analysis of Short Range Order Intensities by the Cluster Variation Method," *Phys. Rev. B*., **51**, 3429-3437, 1995.
77. Thomas, W.A. and Sanchez, J.M., "Observation of Crack Closure in Nicalon/CAS Composites," *J. Mater. Sci. Lett.,* **14**, 571-573, 1995.
78. Chang, A., Colinet, C., Hillert, M., Moser, Z., Sanchez, J.M., Saunders, N., Watson, R.E., and Kussmaul, A., "Estimation of Enthalpies for Stable and Metastable Phases," *Calphad*, **19**, 481-498, 1995.
79. Sanchez, J.M., Cadeville, M.C., Pierron-Bohnes, V., and Inden, G., "Experimental and Theoretical Determination of the Metastable Fe-V Phase Diagram," *Phys. Rev. B*., **54**, 8958-8961, 1996.
80. Thomas, W.A. and Sanchez, J.M., "Influence of Interfacial Sliding Stress on the Fatigue Behavior of Oxidized Nicalon/CAS Composites," *Journal of the American Ceramic Society,* **79**, 2659-2665, 1997.
81. Craievich, P.J., Sanchez, J.M., Watson, R.E., and Weinert, M., "Structural Instabilities of Excited Phases," *Phys. Rev. B*., **55**, 787-797, 1997.
82. Lee, Y.L. and Sanchez, J.M., "Simulation of Chemical-Vapor-Deposited Silicon Carbide for a Cold Wall Vertical Reactor," *J. of Crystal Growth*, **178**, 513-517, 1997.
83. Lee, Y.L. and Sanchez, J.M., "Theoretical Study of Thermodynamics Relevant to Tetramethylsilane Pyrolysis," *J. of Crystal Growth*, **178**, 505-512, 1997.
84. Craievich, P.J. and Sanchez, J.M., "Vibrational Free Energy in the Ni-Cr System," *Comput. Mater. Sci.,* **8**, 92-99, 1997.
85. Diaz-Ortiz, A., Sanchez, J.M., and Moran-Lopez, J.L., "Thermodynamics of Binary Alloy Thin Films," *Comput. Mater. Sci.,* **8**, 79-86, 1997.
86. Sanchez, J.M., "Calculation of Phase Diagrams from First-Principles," *Anales de la Sociedad Quimica Argentina*, **84**, 197-202, 1996.
87. Cacciamani, G., Chang, G.A., Grimvall, G., Franke, P., Kaufman, L., Miodownik, P., Sanchez, J.M., Schalin, M., and Sigli, C., "Order-Disorder Phase Diagrams," *Calphad*, **21**, 220-240, 1997.
88. Jakubenas, K. J., Sanchez, J. M., and Marcus, H. L., "Multiple Material Solid Free-Form Fabrication by Selective Area Laser Deposition," *Materials & Design*, **19**, 11-18, 1998.
89. Diaz-Ortiz, A., Sanchez, J. M., Aguilera-Granja, F., and Moran-Lopez, J. L., "Finite-Size Effects on the Phase Diagrams of Binary Alloy Films," *Solid State Commun.*, **107**, 285-289, 1998.

90. Diaz-Ortiz, A., Sanchez, J. M., and Moran-Lopez, J. L., "Order-Disorder Transitions Under Confinement," *Phys. Rev. Lett*., **81**, 1146-1149, 1998Diaz-Ortiz, A., Sanchez, J.M., and Moran-Lopez, J.L., "Phase Transitions in Confined Antiferromagnets," *Physica Status Solid B*, **220**, 289-394, 2000.
91. Diaz-Ortiz, A. and Sanchez, J.M., "Confinement Effects in Antiferromagnets," *Physical Review B*, **220**, 289 2000.
92. Shaarawi, M.S., Kan, H., Valluri, Sanchez, J.M., Mathiram A., "Synthesis and Characterization of Laser Deposited Materials for Ceramic Joining," in *Ceramic Transactions*, 108, editors Singh, J.P. et al., 101st Annual Meeting of the American Ceramic Society, 83, 1947-1952, 2000.
94. Shaarawi, M.S., Sanchez, J.M., Kan, H., and Manthiram, A., "Modeling Laser Induced Chemical Vapor Deposition of Silicon Carbide Rods from Tetramethylsilane," *J. Am. Ceram. Soc.,* **83**, 1947-1952, 2000.
95. Miura, S., Honma, K., Terada, Y., Sanchez, J.M. and Mohri, T., "Mechanical Properties of Rh-based $L1_2$ Intermetallic Compounds Rh_3, Ti, Rh_3Nb and Rh_3Ta," *Intermetallics*, **8**, 785-791, 2000.
96. R. Drautz, H. Reichert, M. Fahnle, H. Dosch, and J.M. Sanchez, "Segregation and Ordering at the (110) Surface of Ni-rich NiAl" *Phys. Rev. Lett.*, **87**, 236102, 2001.
97. E. Clouet, J.M. Sanchez and C. Sigli, "First Principles Study of the Solubility of Zr in Al," *Phys. Rev. B*, **65**, 094105, 2002.
98. F. Welsch Lechermann, C. Elsässer, C. Ederer, M. Fähnle, J.M. Sanchez and B. Meyer, "Density-functional Study of Fe-3-Al: LSDA versus GGAF," *Phys. Rev. B*, **65**, 132104, 2002.
99. Y. Terada, K. Ohkubo, S. Miura, J.M. Sanchez, T. Mohri, "Thermal Conductivity and Thermal Expansion of $L1_2$ Intermetallic Compounds Based on Rhodium," *J. Alloys and Compounds*, **354**, 202, 2003.
100. R. Drautz, M. Fähne. and J.M. Sanchez, "General Relations Between Many-Body Potentials and Cluster Expansions in Multicomponent Systems," *J. Phys.: Condens. Matter*, **16**, 3843, 2004.
101. A. Diaz-Ortiz, R. Drautz, M. Fahnle, H. Dosch, and J.M. Sanchez, "Structure and Magnetism in bcc-Based Iron-Cobalt Alloys," *Phys. Review B*, **73**, 224208, 2006.
102. J.M. Sanchez, "Cluster Expansion and the Configurational Theory of Alloys," *Phys. Review B*, **81**, 224202, 2010.
103. J.M. Sanchez, T. Mohri, "Approximate solutions to the cluster variation free energies by the variable basis cluster expansion," *Comp. Mat. Sc.,* **122**, 301-306, 2016.
104. J.M. Sanchez, "Foundations and Practical Applications of the Cluster Expansion," *J. Phase Equilib. Diffus*., **38**, 238-251, 2017.
105. J.M. Sanchez, Reply to "Comment on 'Cluster expansion and the configurational theory of alloys"' *Phys. Review B*, **95**, 216202, 2017.

B. Refereed Conference Proceedings

1. Yamauchi, H., Sanchez, J.M., De Fontaine, D., and Kikuchi, R., "A Thermodynamic Approach to Irradiation-Induced Precipitation in Undersaturated Solid Solutions," Proceedings of the International *Conference on Irradiation Behavior of Metallic Materials for Fast Reactor Core Components*, pp. 81-87, Ajaccio, France, June 4-8, 1979.
2. Sanchez, J.M. and De Fontaine, D., "Cluster Approach to Order-Disorder Transitions," in *Modulated Structures 1979,* edited by Cowley, J.M., Cohen, J.B., Salamon, M.B., and Wuensch, B.J., American Institute of Physics Conference Proceedings, Vol. 53, pp. 133-145, New York, 1979.
3. Tien, J.K., Sanchez, J.M., and Jarrett, R.N., "Outlook for Conservation of Chromium in Superalloys," in *Technical Aspects of Critical Materials Use by the Steel Industry*, edited by Mehrabian, E., NBS P3-2679-2, Vol. IIB, p 26, National Bureau of Standards, Washington, D.C., 1983.
4. Sanchez, J.M. and Moran-Lopez, J.L., "Surface Effects in Binary Alloys," in *Extended Abstracts: Alloy Phase Diagrams,* edited by Bennett, L.H., Giessen, B.C., and Massalski, T.B., pp. 7-9, Materials Research Society, Boston, MA, 1984.

5. Castillo-Alvarado, F.L., Moran-Lopez, J.L., and Sanchez, J.M., "Electronic Theory of Order-Disorder Transformations in Binary Alloys," in *Phase Transformations in Solids*, edited by Tsakalakos, T., Materials Research Society Symp. Proc., Vol. 21, pp. 337-342, Boston, MA, 1984.
6. Castillo-Alvarado, F.L., Moran-Lopez, J.L., and Sanchez, J.M., "Electronic Theory of the Co_xFe_{1-x} Phase Diagram,"*Proceedings of the Inter-American Workshop on Alloy Theory and Phase Equilibrium" (Buenos Aires, Argentina, August 1995)*, edited by Farkas, D., and Dyment, F., pp. 23-28, American Society for Metals Conference Proceedings, 1986.
7. Mejia-Lira, F., Moran-Lopez, J.L., and Sanchez, J.M., "Order Phenomena at the Surface of Finite and Semi-Infinite Systems," *Proceedings of the Inter-American Workshop on Alloy Theory and Phase Equilibrium (Buenos Aires, Argentina, August 1995)*, edited by Farkas, D., and Dyment, F., pp. 61-68, American Society for Metals Conference Proceedings, 1986.
8. Sanchez, J.M. and Moran-Lopez, J.L., "Critical and Multicritical Phenomena in Semi-infinite Ising Systems," in *Magnetic Properties of Low Dimensional Systems*, edited by Falicov, L., and Moran-Lopez, J.L., Springer Proceedings in Physics, Vol. 14, pp. 114-120, Springer-Verlag, Berlin, 1986.
9. Sanchez, J.M., Eng, S., Wu, Y.P., and Tien, J.K., "Modeling of Antiphase Boundaries in $L1_2$ Structures," In *High-Temperature Ordered Intermetallic Alloys II,* edited by Stoloff, N.S., Koch, C.C., Liu, C.T., and O. Izumi, Mat. Res. Soc. Symp. Proc., Vol. 81, pp. 57-64, Boston, MA, 1987.
10. Tien, J.K., Eng, S. and Sanchez, J.M., "An Overview of the Temperature Dependence of the Strength of the Ni_3Al System," in *High-Temperature Ordered Intermetallic Alloys II*, edited by Stoloff, N.S., Koch, C.C., Liu, C.T., and Izumi, O., Mat. Res. Soc. Symp. Proc., Vol. 81, pp. 183-193, Boston, MA, 1987.
11. Sanchez, J.M., Mejia-Lira, F., and Moran-Lopez, J.L., "Structural Transition and Oxygen Ordering in $YBa_2Cu_3O_{6+x}$," *Proceedings of the Latin-American Conference on High Temperature Superconductivity*, Rio de Janeiro, Brazil, May 4-6, 1988.
12. Tso, N.C. and Sanchez, J.M., "Continuous Ordering Reactions in $NiAl/Ni_2AlTi$ Dual Phase Alloys," *Mat. Res. Soc. Symp. Proc.*, Vol. 133, pp. 63-68, Boston, MA, 1989.
13. Wu, Y.P., Sanchez, J.M., and Tien, J.K., "Microsegregation to Antiphase Boundaries in Monolitic γ' Phase with Ternary Additions," *Mat. Res. Soc. Symp. Proc.*, Vol. 133, pp. 119-124, Boston, MA, 1989.
14. Sanchez, J.M. and Moran-Lopez, J.L., "Magnetic Properties of Anisotropic Thin Films," in *Magnetic Properties of Low-Dimensional Systems II*, edited by Falicov, L.M., Mejia-Lira, F., and Moran-Lopez, J.L., Springer Proceedings in Physics, Vol. 50, pp. 94-101, Springer-Verlag, Berlin, 1990.
15. Sanchez, J.M., Becker, J.D., and Carlsson, A.E., "Phase Stability and Diagrams: A Case Study in *Computational Materials Engineering," in Computer Aided Innovation of New Materials*, edited by M. Doyama, Suzuki, T., Kihara, J., and Yamamoto, R., pp. 791-794, Elsevier Science Publishers (North-Holland), Amsterdam, 1991.
16. Vignoul, G.E., Sanchez, J.M., and Tien, J.K., "The High Temperature Deformation Behavior of a Cr_2Nb Ordered Intermetallic Compound," in *High-Temperature Ordered Intermetallic Alloys IV*, edited by L. A. Johnson, Pope, D.P., and Stiegler, J.O., Mat. Res. Soc. Symp. Proc., Vol. 213, pp. 739-744, Boston, MA, 1991.
17. Wu, Y.P., Sanchez, J.M., and Tien, J.K., "Effect of APB Microsegregation on the Strength of Ni_3Al with Ternary Additions," in *High-Temperature Ordered Intermetallic Alloys IV*, Mat. Res. Soc. Symp. Proc., Vol. 213, pp. 87-94, Boston, MA, 1991.
18. Becker, J.D., Sanchez, J.M., and Tien, J.K., "First-Principles Calculations of Phase Stability for High Temperature Intermetallics," in *High-Temperature Ordered Intermetallic Alloys IV,* edited by L. A. Johnson, Pope, D.P., and Stiegler, J.O., Mat. Res. Soc. Symp. Proc., Vol. 213, pp. 113-118, Boston, MA, 1991.
19. Sanchez, J.M., Cadeville, M.C., and Pierron-Bohnes, V., "CVM Simulation of the Resistivity in $L1_0$ and $L1_2$ Co-Pt Intermetallic Compounds," in *High-Temperature Ordered Intermetallic Alloys IV,* edited by

Johnson, L.A., Pope, D.P., and Stiegler, J.O., Mat. Res. Soc. Symp. Proc., Vol. 213, pp. 43-49, Boston, MA, 1991.

20. Sanchez, J.M., Moran-Lopez, J.L., and Cadeville, M.C., "Magnetic and Chemical Ordering in the NiPt and CoPt Systems," in *Alloy Phase Stability and Design*, Mat. Res. Soc. Symp. Proc., Vol. 186, pp. 71-76, Boston, MA, 1991.
21. Garland, J.S. and Sanchez, J.M., "Cluster Variation Method Calculation of the Metastable Aluminum-Lithium Phase Diagram," in *Kinetics of Ordering Transformations in Metals*, edited by Chen, H., and Vasuvedan, V., pp. 207-216, The Minerals, Metals and Materials Society, Warrendale, Pennsylvania, 1992.
22. Sanchez, J.M., Becker, J.D., and Tien, J.K., "Solubility and Phase Stability in Ordered Intermetallics," *Ordered Intermetallics- Physical Metallurgy and Mechanical Behavior*, edited by Liu, C.T., Cahn, R.W., and Sauthoff, G., pp. 73-88, Kluwer Academic Publisher, Boston, MA, 1992.
23. Sanchez, J.M. and Becker, J.D., "Phase Stability and Diagrams from First Principles," *Materials Theory and Modeling*, edited by J. Broughton, P. Bristowe and J. Newsam, Mat. Res. Soc. Symp. Proc., Vol. 2191, pp. 115-127, Boston, MA, 1993.
24. Becker, J.D. and Sanchez, J.M., "Alloy Phase Stability and Diagrams from First Principles," in *Computer Aided Innovation of New Materials II*, edited by M. Doyama, Kihara, J., Tanaka, M., and Yamamoto, R., pp. 713-713, North-Holland, Amsterdam, 1993.
25. Seth, N.K., Manriquez, J.A., Freitas, C.A., Sanchez, J.M., Miglin, M.T., and Nelson, J.L., "Delta (Ni_3Nb) and IGSCC Degradation in Alloy 718 and Derivatives, "*Sixth International Symposium on Environmental Degradation of Materials in Nuclear Power Systems-- Water Reactors*," edited by Gold, R.E., and Simonen, E.P., pp. 829-835, The Minerals, Metals and Materials Society, Warrendale, PA, 1993.
26. Seth, N.K., Hendrix, B.C., Ide, H., Sanchez, J.M., and Miglin, M.T., "Relating Microstructure to SCC in Inconel 718," *First International Conference on Microstructures and Mech. Properties of Aging Materials*, edited by Liaw, P.K., Visawanthan, R., Murty, K.L., Simonen, E.P., and Frear, D., pp. 493-497, The Minerals, Metals and Materials Society, Warrendale, PA, 1993.
27. Sanchez, J.M. and Moran-Lopez, J.L., "Statistical Thermodynamics of Surfaces and Interfaces," in *Nanophases and Nanocrystalline Structures,* edited by Shull, R. D., and Sanchez, J.M., pp. 59-70, The Minerals, Metals and Materials Society, Warrendale, PA, 1993.
28. Sanchez, J.M., "Statistical Thermodynamics of Alloys," in *Metallic Alloys: Experimental and Theoretical Perspectives* , edited by Faulkner, J.S. and Jordan, R.G., pp. 139-148, Kluwer Academic Publishers, Boston, MA, 1994.
29. Cenedese, P. and Sanchez, J.M., "Statistical Thermodynamics and Critical Behavior of Magnetic Multilayers," *Metallic Alloys: Experimental and Theoretical Perspectives*, edited by Faulkner, J.S., and Jordan, R.G., pp. 369-378, Kluwer Academic Publishers, Boston, MA, 1994.
30. Aguilera-Granja, F., Moran-Lopez, J.L., and Sanchez, J.M., "Simulations in Ising Square Antiferromagnets," *Proceedings of the CAM-94 Physics Meeting*, edited by Zepeda, A., pp. 233-239, American Institute of Physics Conference Proceedings, Vol. 342, Woodbury, NY, 1995.
31. Lee, Y.L., Tompkins, J.V., Sanchez, J.M., and Marcus, H.L., "Deposition Rates of Silicon Carbide by Selected Area Laser Deposition," *Proceedings of the Solid Freeform Fabrication Symposium*, edited by Marcus, H.L., Beaman, J., Bourell, D., and Barlow, J., pp. 433-437, The University of Texas at Austin, Austin, Texas, 1995.
32. Craievich, P.J. and Sanchez, J.M., "Mechanical Stability in the Nickel-Chromium System," *Proceedings of the Workshop on Modelling and Simulation for Materials Design,* edited by Nishijima, S., and Onodera, H., pp. 108-113, Tsukuba, Japan, March, 1996.
33. Sanchez, J.M., "First Principles Calculation of Phase Diagrams," *Proceedings of the X Workshop on Solid State Physics,* pp. 8-13, University of Concepcion, Concepcion, Chile, 1996.
34. B. Birmingham, J. Tompkins, C. Sadler, J.M. Sanchez and H. Marcus, "Joining Ceramics by Selective Beam Deposition," *Processing and Fabrication of Advanced Materials,* T. Srivatsan and J. Moore, eds., TMS Conference Proceedings, pp. 881-888, 1996.

35. Attarwala, A.I., and Sanchez, J.M., "A New Methodology to Measure the Damaging Strains Stored in Lead/Tin Solders During Cyclic Loading," *Design and Reliability of Solders and Solder Interconnections*, pp. 35-41, TMS Conference Proceedings, 1997.
36. Freitas, C.A., and Sanchez, J.M., "Mechanical and Thermodynamic Properties of the Ir-Nb-Zr Intermetallic System," in *International Conference on Thermomechanical Processing of Steels and Other Materials*, edited by T. Chandra and T. Sakai, TMS Conference Proceedings, 1997, pp. 1567-1573.

C. Other Major Publications

D. Books, Book Chapters Authored/Co-authored, Editor/Co-Editor of Books

1. Sanchez, J.M. Kikuchi, R., Yamauchi, H., and De Fontaine, D., "Cluster Approach to Order and Disorder," in *Theory of Alloy Formation*, edited by Bennett, L.H., The Metallurgical Society of AIME, 289-301, Warrendale, PA, 1980.
2. Sanchez, J.M. and De Fontaine, D., "Theoretical Predictions of Ordered Superstructures in Metallic Alloys" in S*tructure and Bonding in Crystals*, edited by O'Keefe, M., and Navrotsky, A., Vol. II, Chapter 20, 117-132, Academic Press, New York, NY, 1981.
3. Sanchez, J.M., Jarrett, R.N., Sigli, C., and Tien, J.K., "Recent Practical Applications of the Cluster Variation Method - A Review," in *High Temperature Alloys: Theory and Design,* edited by Stiegler, O.R., 83-101, The Metallurgical Society of AIME, Warrendale, PA, 1984.
4. Sigli, C. and Sanchez, J.M., "Microscopic Theories of Alloy Phase Equilibrium," in *Alloying*, Chapter 5, 123-149, edited by Walter, J.L., Jackson, M.R., and Sims, C.T., ASM International, Metals Park, Ohio, 1988.
5. Tso, N.C., Sanchez, J.M., and Tien, J.K., "Modeling of Ternary Phase Equilibrium by the Cluster Variation Method," in *Superalloys, Supercomposites and Superceramics*, edited by Tien, J.K., and Caulfield, T., 525-543, Academic Press, New York, NY, 1989.
6. Sanchez, J.M. and Moran-Lopez, J.L., "Oxygen Ordering in $YBa_2Cu_3O_{6+\delta}$: A Phase Diagram Calculation," in *Oxygen Disorder Effects in High-Tc Superconductors*, edited by Moran-Lopez, J.L., and Shuller, I.K., 63-73, Plenum Press, New York, 1990.
7. Sanchez, J.M., "Phase Transformations at Surfaces and Interfaces," *Encyclopedia of Materials Science and Engineering*, (Supplementary Vol. 2), edited by Cahn, R.W., p. 1153, Pergamon Press, Oxford, 1990.
8. Sanchez, J.M., "Phase Transformations at Surfaces and Interfaces," in *Concise Encyclopedia of Semiconducting Materials and Related Technologies*, edited by Mahajan, S., and Kimerling, L.C., p. 359, Pergamon Press, New York, NY, 1992.
9. Cadeville, M.C., Sanchez, J.M., Pierron-Bohnes, V., and Moran-Lopez, J.L., "Effect of Long-Range Ordering on the Magnetic and Electronic Properties of Some Transition Metal Based Alloys," in *Structural and Phase Stability of Alloys,* edited by Mejia-Lira, F., Moran-Lopez, J.L., and Sanchez, J.M., 19-38, Plenum, New York, NY, 1992.
10. Sanchez, J.M., "First Principles Calculation of Phase Diagrams," in *Structural and Phase Stability of Alloys,* edited by Mejia-Lira, F., Moran-Lopez, J.L., and Sanchez, J.M., 151-165, Plenum, New York, NY, 1992.
11. Sanchez, J.M. and Becker, J.D., "From Electronic Structure to Phase Diagrams," in *Interatomic Potential and Structural Stability*, edited by Terakura, K., and Akai, H., 143-156, Springer-Verlag, Berlin, 1993.
12. Sanchez, J.M., "Recent Advances in Computational Materials Science and Engineering," in *Advanced Topics in Materials Science and Engineering,* edited by Moran-Lopez, J.L. and Sanchez, J.M., 257-271, Plenum Press, 1993.
13. Moran-Lopez, J.L., Sanchez, J.M., A. Latge and E. V. Anda, "Oxygen Disorder Effects on the Electronic Structure of $YBa_2Cu_3O_{6+d}$," in *Defects in Electronic Ceramics*, edited by Pizzini, S., Materials Science Forum, Vol. 116, 57-80, Trans. Tech. Pub., Switzerland, 1993.

14. Sanchez, J.M., "Order-Disorder Transitions," *Encyclopedia of Allied Physics*, Vol. 13, 1-16, VCH Publishers, Brookhaven, NY, 1995.
15 Cenedese, P. and Sanchez, J.M., "Critical Behavior of Magnetic Multilayers, "New *Trends in Magnetic Materials and their Applications*, edited by Moran-Lopez, J.L. and Sanchez, J.M., 119-130, Plenum Press, 1995.
16. Attarwala, A.I., Hendrix, B.C., and Sanchez, J.M., "Determining the Damaging Strains which Cause Failure in Pb-Sn Solders," Materials for Electronic Packaging, Edited by D.D.L. Chung, 57-77, Butterworth-Heinemann, 1996.
17. Cadeville, M.C., Pierron-Bohnes, V., Sanchez, J.M., and Moran-Lopez, J.L., "The CVM and Inverse CVM: Examples in Transition-Metal Based Alloys and Intermetallic Compounds," in Theory *and Applications of the Cluster Variation and Path Probability Methods,* edited by Moran-Lopez, J.L. and Sanchez, J.M., 341-352, Plenum Press, 1996.
18. Sanchez, J.M., "The Cluster Expansion Method," *Theory and Applications of the Cluster Variation and Path Probability Methods,* Moran-Lopez, J.L. and Sanchez, J.M., Editors, 175-185, Plenum Press, 1996.
19. Craievich, J.P., and Sanchez, J.M., "First Principles Study of Phase Equilibria in the Ni-Cr System," in *Current Problems in Condensed Matter: Theory and Experiments*, edited by Moran-Lopez, J.L., Plenum Press, NY, 1998, pp. 301-313.
20. Sanchez, J.M., "First Principles Thermodynamics of Alloys," in *Frontiers in Materials Modelling and Design,* edited by Kumar, V., Sengupta, S., and Raj, B., pp. 122-128, Springer-Verlag, NY, 1997.

Books Edited/Co-edited

1. Mejia-Lira, F., Moran-Lopez, J.L., and Sanchez, J.M., *Structural and Phase Stability of Alloys,* Plenum Press, New York, NY, 1992.
2. Moran-Lopez, J.L., and Sanchez, J.M., *Advanced Topics in Materials Science and Engineering*, Plenum Press, New York, NY, 1993.
3. Shull, R. D., and Sanchez, J.M., *Nanophases and Nanocrystalline Structures*, The Minerals, Metals & Materials Society, Warrendale, PA, 1993.
4. Moran-Lopez, J.L., and Sanchez, J.M., *New Trends in Magnetic Materials and their Applications*, Plenum Press, New York, NY, 1995.
5. Moran-Lopez, J.L., and Sanchez, J.M., *Theory and Applications of the Cluster Variation and Path Probability Methods*, Plenum Press, New York, 1996.

ORAL PRESENTATIONS:

A. Invited or Keynote Speeches

1. Sanchez, J.M. and De Fontaine, D., "The Omega Phase Transformation," *Int'l Conference on Order and Disorder*, Paris, August 1977.
2. Sanchez, J.M., De Fontaine, D., and Kikuchi, R., "Application of the Cluster Variation Method to Order-Disorder Phase Diagrams," Symp. on Spinodal and Ordering Transformations, *TMS-AIME Annual Mtg.*, Denver, Colorado, February 1978.
3. Sanchez, J.M., "Classical Approach to Order-Disorder," *Physics Department*, *U. of Sao Paulo,* Sao Paulo, Brazil, October 1979.
4. Sanchez, J.M., "The Cluster Variation Method," *Centro Brasileiro de Pesquisas Fisicas,* Rio de Janeiro, Brazil, August 1979.
5. Sanchez, J.M., "Order-Disorder Theory in Solids," *Annual Mtg. Sociedade Brasileira de Cristalografia,* Recife, Brazil, July 1979.

6. Sanchez, J.M. and De Fontaine, D., "Cluster Approach to Order-Disorder Transitions," *Int'l Conf. on Modulated Structures*, Kailua-Kona, Hawaii, March 1979.
7. Sanchez, J.M., Kikuchi, R., Yamauchi, H., and De Fontaine, D., "Cluster Approach to Order and Disorder," Symp. on the Theory of Alloy Formation, *TMS-AIME Annual Mtg.* New Orleans, February 1979.
8. Sanchez, J.M., "Diffusion Mechanism in Anomalous Metals," *Gordon Research Conf. on Physical Metallurgy,* Andover, NH, July 1980.
9. Sanchez, J.M., "Cluster Methods for Determining Ordered Structures," *Department of Materials Science and Mineral Engineering*, *University of California,* Berkeley, April 1980.
10. Sanchez, J.M., "A New Approach to Binary and Ternary Phase Diagram Determination," *IBM T.J. Watson Research Center*, Yorktown Heights, NY, December 1981.
11. Sanchez, J.M. and De Fontaine, D., "Anomalous Diffusion in the Group IV-A Transition Metals," *TMS-AIME Fall Mtg.*, Louisville, Kentucky, October 1981.
12. Sanchez, J.M., "Calculation of Phase Diagrams in Order-Disorder Systems," *Henry Krumb School of Mines*, *Columbia University*, New York, March 1981.
13. Sanchez, J.M., "Aroximate Treatment of Order-Disorder Transitions by the Cluster Variation Method," *Physics Department*, *Arizona State University*, Tempe, Arizona, February 1981.
14. Sanchez, J.M. and Tien, J.K., "Nickel-Cobalt Substitution in Superalloys," *Workshop on Replacement of Cobalt Alloys in Nuclear Power Plants*, Electric Power Research Institute, Palo Alto, CA, October 1982.
15. Sanchez, J.M., "Simulation of Phase Equilibrium in Binary Alloys," *Department of Mechanics and Materials Science, Rutgers University,* Piscataway, New Jersey, September 1982.
16. Sanchez, J.M., "A New Formalism for Cluster Expansions in Statistical Mechanics," *Department of Materials Science and Mineral Engineering*, University of California, Berkeley, June 1982.
17. Sanchez, J.M., "Fluctuations and Correlations in the Cluster Variation Approximation," *Centro de Investigacion y Estudios Avanzados, IPN*, Mexico, January 1982.
18. Sanchez, J.M., "Order-Disorder in Metallic Systems," *Physics Department, Centro de Investigaciones y Estudios Avanzados, IPN*, Mexico, January 1982.
19. Sanchez, J.M., "Modeling of Alloy Phase Equilibrium," *Metals and Ceramics Division, Oak Ridge National Laboratories*, December 1983.
20. Sanchez, J.M., "Surface Effects in Binary Alloys," *3rd. Congress on Surfaces and Interfaces,* Mexican Society of Surface Science and Vacuum, Oaxtepec, Mexico, October 1983.
21. Sanchez, J.M., "Calculation of Phase Diagrams by the Cluster Variation Method," *Department of Physics, Polytechnic Institute of New York*, Brooklyn, New York, February 1983.
22. Sanchez, J.M., "Computation of Alloy Phase Diagrams," *Physics Department, Brookhaven National Laboratories*, February 1983.
23. Sanchez, J.M., "Surface Effects in Binary Alloys," *Materials Research Soc.*, Boston, Massachusetts, December 1984.
24. Sanchez, J.M., "A Theoretical Approach to Alloy Phase Equilibria," *ALCOA Technical Center,* Pittsburgh, PA., September 1984.
25. Sanchez, J.M., "Short-Range Order Effects on Magnetic Alloys," *TMS-AIME* , Detroit, September 1984.
26. Sanchez, J.M., "Alloy Phase Equilibrium - Beyond Mean Field," *Gordon Research Conference on Physical Metallurgy*, Andover, NH, July 1984.
27. Sanchez, J.M., "Modeling of Alloy Phase Diagrams by the Cluster Variation Method," Conference on High-Temperature Alloys: Theory and Design, Bethesda, Maryland, April 1984.
28. Sanchez, J.M., "Phase Equilibrium in Alloys: Beyond Mean Field," *Materials Department, University of California*, Los Angeles, January 1984.
29. Sigli, C. and Sanchez, J.M., "Stable and Metastable Equilibrium in the Li-Al System," *ALCOA 2nd Al-Li Workshop*, June 1985.
30. Sanchez, J.M., "Calculation of Equilibrium and Metastable Phase Diagrams," *Solid State Physics Conference, Imperial College*, London, December 1986.

31. Sanchez, J.M. and Moran-Lopez, J.L., "Short-Range Order Effects on the Magnetic Properties of Ni-Pt Alloys," *AIME-TMS Fall Meeting*, Orlando, Florida, October 1986.
32. Sanchez, J.M., "The Effect of Planar Defects on First-Order Phase Transformations," *Gordon Research Conference on Physical Metallurgy*, Andover, New Hampshire, July 1986.
33. Sanchez, J.M., "Microscopic Theories of Alloy Phase Equilibrium," *Department of Materials Science, University of Pennsylvania*, Philadelphia, November 1987.
34. Tso, N.C. and Sanchez, J.M., "Cluster Variation Calculation of Ordered-Alloy Phase Diagrams," *TMS-AIME Fall Meeting*, Cincinnati, Ohio, October 1987.
35. Sanchez, J.M., "Thermodynamics of Surfaces and Interfaces," *Gordon Research Conference on Physical Metallurgy*, Tilton, New Hampshire, July 1987.
36. Sanchez, J.M., "Microscopic Theories of Alloy Phase Equilibrium," *General Electric Corporation*, Schenectady, New York, May 1987.
37. Sanchez, J.M., "Surface Order-Disorder Phenomena," *Physics Department, Universidad Autonoma San Luis Potosi*, San Luis Potosi, Mexico, January 1987.
38. Sanchez, J.M., "Quantum Engineering: A New Era in Materials Design," *Physics Department, University of San Luis Potosi,* Mexico, March 1988.
39. Sanchez, J.M., "Phase Transitions at Surfaces," *Centro Brasileiro de Pesquisas Fisicas,* Rio de Janeiro, Brazil, May 25, 1988.
40. Sanchez, J.M., "Computation of Phase Diagrams: Phenomenology and First Principles," *XI Congress of Condensed Matter Physics,* Caxambu, Minas Gerais, Brazil, May 9-13, 1988.
41. Sanchez, J.M., "Phase Transitions in Alloy Surfaces," *University of Sao Paulo,* Sao Paulo, Brazil, May 2, 1988.
42. Sanchez, J.M., "Order-Disorder Transitions in Alloy," *Federal University of Sao Carlos,* Sao Carlos, Brazil, April 28, 1988.
43. Sanchez, J.M., "Thermodynamics of Surfaces and Extended Defects," *University of Campinas (UNICAMP)*, Campinas, Brazil, April 14, 1988.
44. Sanchez, J.M., "Superconducting Ceramics," *National Laboratory of Synchrotron Light*, Campinas, Brazil, April 12, 1988.
45. Sanchez, J.M. and Moran-Lopez, J.L., "Oxygen Ordering in $YBa_2Cu_3O_{6+\delta}$: A Phase Diagram Calculation," *International Conference on Oxygen Disorder Effects on High-Tc Superconductors,* International Center for Theoretical Physics, Trieste, Italy, April 1989.
46. Sanchez, J.M., Becker, J.D., and Carlsson, A.E., "Phase Stability and Diagrams: A Case Study in Computational Materials Engineering," *First International Conference on Computer Applications to Materials Science and Engineering,* Tokyo, Japan, August 1990.
47. Sanchez, J.M. and Moran-Lopez, J.L., "Magnetic Properties of Anisotropic Thin Films," *International Workshop on Magnetic Properties of Low-Dimensional Systems II*, San Luis Potosi, Mexico, July 1990.
48. Sanchez, J.M., "First Principles Computation of Phase Diagrams", *International Symposium on Phase Diagram Prediction*, Cincinnati, Ohio, October 1991.
49. Sanchez, J.M., Becker, J.D., and Tien, J.K., "Solubility and Phase Stability in Ordered Intermetallics," *NATO Advanced Research Workshop on Ordered Intermetallics,* Irsee, Germany, June 23-29, 1991.
50. Sanchez, J.M., "Surface Thermodynamics: Beyond Mean Field," *Physics Department, Louis Pasteur University*, Strasbourg, France, May 30, 1991.
51. Sanchez, J.M., "Surface Segregation in Alloys," *Picheney Research Center,* Grenoble, France, May 28, 1991.
52. Sanchez, J.M., "First Principles Calculation of Phase Diagrams," *Adriatico Research Conference on Structural and Phase Stability of Alloys, Trieste*, Italy, 21-24, May 1991.
53. Sanchez, J.M., "First Principles Calculation of Phase Diagrams", *Department of Materials Science and Engineering, Carnegie-Mellon University*, Pittsburgh, Pennsylvania, February 11, 1992.
54. Sanchez, J.M., "Phase Stability and Diagrams from First Principles," *Materials Research Society,* Boston, Massachusetts, December 1992.

55. Sanchez, J.M., "First Principles Methods in Alloy Phase Stability," *XII Latin American Symposium on Condensed Matter Physics*, Santiago, Chile, November 1992.
56. Sanchez, J.M., "First Principles Methods in Phase Diagram Computations, "Physics *Department, University of Houston*, , Houston, Texas, November 1992.
57. Sanchez, J.M., "Thermodynamics of Ordering and Segregation in Alloys," *TMS-AIME Fall Meeting*, Chicago, Illinois, November 1992.
58. Sanchez, J.M., "Theory and Practice in Alloy Design," *Mechanical and Electrical Engineering Department of the University of Nuevo Leon, Monterey,* Mexico, October 1992.
59. Sanchez, J.M., "Statistical Thermodynamics of Alloys," *Taneguchi Conference on Interatomic Potentials and Structural Stability*, Kashikojima, Japan, October 1992.
60. Sanchez, J.M., "Alloy Phase Stability and Diagrams from First Principles," *2nd International Conference on Computer Applications to Materials and Molecular Science and Engineering*, Yokohama, Japan, September 1992.
61. Sanchez, J.M., "Phase Stability and Diagrams: A Quantum Mechanical Approach," *Hume-Rothery Memorial Symposium, TMS-AIME Annual Meeting*, San Diego, California, March 1992.
62. Sanchez, J.M., "Thermodynamics of Surfaces and Thin Films," *Symposium on Nanophases and Nanocrystalline Structures, TMS-AIME Annual Meeting*, San Diego, California, March 1992.
63. Garland, S. and Sanchez, J.M., "Cluster Variation Method Calculation of the Metastable Aluminum-Lithium Phase Diagram," *Symposium on Kinetics of Ordering Transformations in Metals*, *TMS-AIME Annual Meeting*, San Diego, California, March 1992.
64. Sanchez, J.M., "From Electronic Structure to Phase Diagrams," *Mexican Academy of Materials Sciences*, Cancun, Mexico, September 1993.
65. Sanchez, J.M., "Thermodynamics of Magnetic Multilayers," *II Latin-American Workshop on Magnetism, Magnetic Materials, and Their Applications*, Guanajuato, Mexico, August 1993.
66. Sanchez, J.M., "Statistical Thermodynamics of Alloys: From Enlightened Phenomenology to First Principles," *Gordon Research Conference on Physical Metallurgy*, Plymouth, New Hampshire, August 1993.
67. Cenedese, P., and Sanchez, J.M., "Statistical Thermodynamics and Critical Behavior of Magnetic Multilayers," *NATO Advanced Conference on Metallic Alloys: Experimental and Theoretical Perspectives*, Boca Raton, Florida, July 1993.
68. Sanchez, J.M., "Statistical Thermodynamics of Alloys," *NATO Advanced Conference on Metallic Alloys: Experimental and Theoretical Perspectives*, Boca Raton, Florida, July 1993.
69. Sanchez, J.M., "Thermodynamics of Alloys from First Principles," *Physics Department, Free University of Berlin,* Berlin, Germany, May 1993.
70. Sanchez, J.M., "Modeling of Alloy Phase Stability from First Principals," *National Laboratory for High Energy Physics, Mesoscopic Materials Research Center,* Tsukuba, Japan, November 1993.
71. Sanchez, J.M., "Application of the Cluster Expansion and Cluster Variation Methods," *International Workshop on the Theory and Applications of the Cluster Variation and Path Probability Methods*, San Juan, Teotihuacan, Mexico, June 1995.
72. Sanchez, J.M., "From Electronic Structure to Phase Diagrams," *International Symposia on Advanced Materials and Technology for the 21st Century*, Honolulu, HI, December 14, 1995.
73. Craievich, P.J., and Sanchez, J.M., "Mechanical Stability in the Nickel-Chromium System," *International Workshop on Computer Modelling and Simulation for Materials Design*, National Research Institute for Metals, Tsukuba, Japan, January 31, 1996.
74. Sanchez, J.M., "First Principles Calculation of Phase Diagrams," *X Workshop on Solid State Physics,* University of Concepcion, Concepcion, Chile, April 24, 1996.
75. Sanchez, J.M., "Foundations of the Cluster Expansion," *Workshop on the Theoretical Predictions of Alloy Phase Stability, Ecole Normale Superieure*, Lyon, France, June 10, 1996.
76. Sanchez, J.M., "Ab-initio Calculation of Phase Diagrams, "*Centro de Investigaciones Tecnologicas de las Fuerzas Armadas,* Buenos Aires, Argentina, July 16, 1996.

77. Sanchez, J.M., "Mean-Field Theories in Statistical Thermodynamics," *Comision Nacional de Energia Atomica,* Buenos Aires, Argentina, July 15, 1996.
78. Sanchez, J.M., "First Principles Calculation of Phase Diagrams-Metals," *Gordon Research Conference on Physical Metallurgy*, Plymouth, NH, August 2, 1996.
79. Sanchez, J.M., "Calculation of Alloy Phase Diagrams from First Principles," *Conference on Frontiers in Materials Modelling and Design*, Indira Gandhi Center for Atomic Research, Kalpakkam, India, August 20, 1996.
80. Sanchez, J.M., "First-Principles Computation of Phase Diagrams," *University of Illinois,* Urbana, Illinois, 1996.
81. Sanchez, J.M., "First-Principles Theory of Phase Transformations in Alloys," *Wright-Patterson Air Force Base*, Dayton, Ohio, 1997.
82. Sanchez, J.M., "First Principles Study of Phase Equilibria in the Ni-Cr System," *International Conference on Current Problems in Condensed Matter: Theory and Experiments*, Cocoyoc, Mexico, 1997.
83. Sanchez, J.M., "Mechanical and Thermodynamic Properties of the Ir-Nb-Zr Intermetallic System," *International Conference on Thermomechanical Processing of Steels and Other Materials*, Wollongong, Australia, 1997.
84. Sanchez, J.M. and Diaz-Ortiz, A., "First Principles of Thermodynamics of Alloys," XV Latin American Symposium on Solid State Physics," Cartagena de Indias, Colombia, November 1999.
85. Diaz-Ortiz, A., Sanchez, J.M., and Moran-Lopez, J.L., "Phase Transitions in Confined Antiferromagnets," XV Latin American Symposium on Solid State Physics," Cartagena de Indias, Colombia, November 1999.
86. Diaz-Ortiz, A. and Sanchez, J.M., "Confinement Effects in Antiferromagnets," International Workshop The Physics of Low Dimensions," Oaxaca, Oax., Mexico, January 2000.
87. Sanchez, J.M., Diaz Ortiz, A., Drautz, R., Fähne, M., and Dosch, H., "Novel Phase Equilibria in Fe-Co Alloys," XIV International Materials Research Congress, Cancun, Mexico, August 2005.
88. Sanchez, J.M., "Transdisciplinary Collaboration in Advance Education and Research," 9th World Conference on Integrated Design & Process Technology, San Diego, CA, June 2006.
89. Sanchez, J.M., "The Nearsightedness Myth in Cluster Expansions" at XV International Materials Research Congress, Cancun, Mexico, August 2006.
90. Sanchez, J. M., "The Entrepreneurial Ecosystem at the University of Texas at Austin" at INSPIRE 2007, Taichung, Taiwan, May 2007.
91. Sanchez, J. M., "The Entrepreneurial Ecosystem at the University of Texas at Austin" at SDPS "Integrated and Process Technology" conference, Antalya, Turkey, June 2007
92. Sanchez, J. M., "Global Network for Transdisciplinary Collaboration" at SDPS "Integrated and Process Technology" conference, Asia University in Taichung, Tawain, June 2008
93. Sanchez, J.M., "University-Industry Partnerships: Opportunity or Threat?" at XVII Sociedad Mexicana de Materiales in Cancun, Mexico, August 2008
94. Sanchez, J.M. and Diaz-Ortiz, A., "Deconstructing the Cluster Expansion," at Hume-Rothery Symposium, TMS Annual Meeting, Seattle, Washington, February 2010.
95. Sanchez, J.M. and Peterson R.A., "Transdisciplinarity in Higher Education: Accomplishments and Remaining Challenges", at The ATLAS Conference, Xi'an Jiaotong-Liverpool University, Suzhou, China, May 29-June 2, 2016.
96. Sanchez, J.M., "Computacion Avanzada: Nexo historico entre IPICyT y UT Austin," Instituto Potosino de Investigaciones Cientificas y Tecnologicas," San Luis Potosi, Mexico, 5 August, 2016.

B. Presentation at Technical Meetings

1. De Fontaine, D., Murakami, M., Sanchez, J.M., and Fodor, J., "Diffusion in Au-Ag-Pd Thin Films," *TMS-AIME Fall Mtg.*, Chicago, Illinois, October 1973.

2. Murakami, M., De Fontaine, D., and Sanchez, J.M., "Annealing out of Satellite Reflections in Multilayer Ag-Au-Pd Thin Films," *Int'l Meeting on Studies of Lattice Distortions and Local Arrangements by X-ray, Neutron and Electron Diffraction*, Julich, Federal Republic of Germany, April 1974.
3. Sanchez, J.M. and De Fontaine, D., "A Structural Model for the Omega Phase Transformation," *TMS-AIME Meeting*, Toronto, Canada, May 1975.
4. Sanchez, J.M. and De Fontaine, D., "A Structural Model for the Omega Phase Transformation," *General Mtg. of the American Physical Society*, Anaheim, CA, January 1975.
5. Sanchez, J.M. and De Fontaine, D., "Anomalous Self-Diffusion in Omega-Forming Transition Metals," *TMS-AIME Annual Mtg.*, Las Vegas, Nevada, February 1976.
6. Sanchez, J.M. and De Fontaine, D., "The Omega Phase Transformation and its Effect on Anomalous Diffusion," *American Physical Society*, San Diego, CA, March 1977.
7. Sanchez, J.M. and De Fontaine, D., "Anomalous Self-Diffusion and the Omega Phase Transformation," *TMS-AIME Annual Mtg.*, Atlanta, Georgia, March 1977.
8. Sanchez, J.M., Kikuchi, R., and De Fontaine, D., "Order-Disorder Phase Equilibria and Stability Analysis Calculated by the Cluster Variation Method," *11th Congress of the Int'l Union of Crystallography*, Warsaw, Poland, August 1978.
9. Yamauchi, H., Sanchez, J.M., De Fontaine, D., and Kikuchi, R., "A Thermodynamic Approach to Irradiation Induced Precipitation in Undersaturated Solid Solutions," I*nt'l Conf. on Irradiation Behavior of Metallic Materials for Fast Reactor Core Components*, Ajaccio, France, May 1979.
10. De Fontaine, D. and Sanchez, J.M., "Order Ground States in FCC Lattices," *TMS-AIME Fall Mtg.*, Pittsburgh, PA, October 1980.
11. Sanchez, J.M. and De Fontaine, D., "The Description of Order in Solid Solutions," *TMS-AIME Fall Mtg.*, Pittsburgh, PA, October 1980.
12. Gratias, D., Sanchez, J.M., and De Fontaine, D., "The Use of Group Theory for Calculating Configurational Entropy in the Cluster Variation Method," *12th Congress of the Int'l Union of Crystallography,* Ottawa, Canada, August 1981.
13. Forouhi, A., Sanchez, J.M., and De Fontaine, D., "Ledge Formation in Cu-Ag-Au," *TMS-AIME Annual Mtg.*, Chicago, IL, February 1981.
14. Sanchez, J.M., and De Fontaine, D., "Short Range Order and Fluctuations in Binary Alloys," *TMS-AIME Annual Mtg.*, Chicago, IL, February 1981.
15. Barefoot, J., Jarrett, R., Sanchez, J.M., and Tien, J.K., "Superalloy Composition Modelling," *University Information Exchange Workshop*, NASA Lewis Research Center, Cleveland, Ohio, October 1982.
16. Jarrett, R., Barefoot, J., Tien, J.K., and Sanchez, J.M., "Role of Cobalt in Nickel Base Superalloys," *University Information Exchange Workshop,* NASA Lewis Research Center, Cleveland, Ohio, October 1982.
17. Barefoot, J., Sanchez, J.M., and Tien, J.K., "Applying the Cluster Variation Method for Predicting Phase Fields in Superalloys," *TMS-AIME Annual Mtg.*, St. Louis, Missouri, October 1982.
18. Bras, S., Craievich, A., Sanchez, J.M., Williams, C., and Zanotto, E.D., "SAXS Study of Phase Separation in Glasses Using a New Position Sensitive Detector," *Int'l Conf. on X-ray and VUV Synchrotron Radiation Instrumentation*, Hamburg-DESY, Germany, August 1982.
19. Gratias, D., Sanchez, J.M., and De Fontaine, D., "Application of Group Theory to the Calculation of the Configurational Entropy in the Cluster Variation Method," *TMS-AIME Annual Mtg.*, Dallas, Texas, February 1982.
20. Sanchez, J.M. and De Fontaine, D., "Coherent Phase Diagram Calculations in the FCC Lattice with First- and Second-Neighbor Interactions," *TMS-AIME Annual Mtg.*, Dallas, Texas, February 1982.
21. Sanchez, J.M., Gratias, D., and De Fontaine, D., "Special Points in Order-Disorder Transitions with Applications to HCP Structures," *TMS-AIME Annual Mtg.*, Dallas, Texas, February 1982.
22. F. A. Castillo-Alvarado, Moran-Lopez, J.L., and Sanchez, J.M., "Electronic Theory of Phase Transformations in Alloys," *Int'l Conference on Phase Transformations in Solids,* Crete, Greece, June 1983.

23. Sanchez, J.M., Barefoot, J., and Tien, J.K., "Modelling of Alloy Phase Diagrams for Systems with Lattice Parameter Dependent Interactions," *TMS-AIME Annual Mtg.*, Atlanta, GA, March 1983.
24. Sanchez, J.M., De Fontaine, D., and B. Davis, "Theoretical Study of Phase Equilibria in FCC Binary Systems," *TMS-AIME Annual Mtg.*, Atlanta, GA, March 1983.
25. Sanchez, J.M., "Generalized Superposition Approximation for the Calculation of Configurational Free Energies," *TMS-AIME Annual Mtg.*, Atlanta, GA, March 1983.
26. Sigli, C. and Sanchez, J.M., "Investigation of Real Phase Diagrams by the Cluster Variation Method," *TMS-AIME Fall Mtg.,* Detroit, September 1984.
27. Hawkins, R.J., Robbins, M.O., and Sanchez, J.M., "Calculation of the Cr-W Phase Diagram Using the CV Method and the Tight Binding Hamiltonian," *TMS-AIME Fall Mtg.*, Detroit, September 1984.
28. Jarrett, R.N., Sanchez, J.M., and Tien, J.K., "Cluster Variation Methodology Approach to Predicting Superalloy Phase Diagrams," *TMS-AIME Annual Mtg.*, Los Angeles, CA, February 1984.
29. Mohri, T., Sanchez, J.M., and De Fontaine, D., "Short Range Order Diffuse Intensity Calculations by the CVM," *TMS-AIME Annual Mtg.*, Los Angeles, CA, February 1984.
30. Sigli, C. and Sanchez, J.M., "Modelling of Incoherent Phase Equilibrium by the Cluster Variation Method," *TMS-AIME Annual Mtg.*, Los Angeles, CA, February 1984.
31. Sanchez, J.M., Mohri, T., and De Fontaine, D., "Prototype Binary Phase Diagrams in the Cluster Variation Approximation," *TMS-AIME Annual Mtg.* Los Angeles, CA, February 1984.
32. Sigli, C., Sanchez, J.M., and Papazian, J.M., "GP Zones in Binary Al-Li Alloys?," *3rd International Aluminium-Lithium Conference,* University of Oxford, England, July 1985.
33. Craievich, A., Sanchez, J.M., and Williams, C., "Phase separation in B2O3-PbO-Al2O3 glasses: composition and temperature dependence of the scaled structure function," *Symposium on Small Angle Scattering*, DESY - HASYLAB, Hamburg, Germany, April 1985.
34. Hawkins, R.J., Robbins, M.O., and Sanchez, J.M., "A Microscopic Theory of Binary Alloy Phase Equilibrium," *American Physical Society,* Baltimore, Maryland, March 1985.
35. Hawkins, R. and Sanchez, J.M., "The Concentration Dependence of Pair Interactions in Alloys - A Cluster Bethe Lattice Approach,"*TMS-AIME Annual Mtg.*, New York, February 1985.
36. Sigli, C. and Sanchez, J.M., "Investigation of the Phase Diagram and Free Energy Functions for the Ni-Cr System," *TMS-AIME Annual Mtg.*, New York, February 1985.
37. Sanchez, J.M., Eng, S., Wu, Y.P., and Tien, J.K., "Modeling of Antiphase Boundaries in $L1_2$ Structures," *Materials Research Society*, Boston, Massachusetts, December 1986.
38. Tien, J.K., Eng, S., and Sanchez, J.M., "An Overview of the Temperature Dependence of the Strength of the Ni_3Al System," *Materials Research Society*, Boston, Massachusetts, December 1986.
39. Sigli, C. and Sanchez, J.M., "Calculation of the Energy of Formation of bcc and fcc Isomorphic Alloys," *AIME-TMS Fall Meeting*, Orlando, Florida, October 1986.
40. Craievich, A.F., Sanchez, J.M., and Williams, C.E., "Phase Separation and Dynamical Scaling in Borate Glasses," *AIME-TMS Fall Meeting*, Orlando, Florida, October 1986.
41. Hawkins, R. and Sanchez, J.M., "The Role of Ferromagnetism in the Chemical Ordering of Cobalt-Iron," AIME-*TMS Fall Meeting*, Orlando, Florida, October 1986.
42. Tso, N.C. and Sanchez, J.M., "Cluster Variation Calculation of Two Phase Boundaries in Al-Li-X Alloys," *AIME-TMS Fall Meeting*, Orlando, Florida, October 1986.
43. Dahmani, C.E., Cadeville, M.C., Sanchez, J.M., and Moran-Lopez, J.L., "Interplay between Magnetic and Spatial Ordering: The Ni-Pt System," March Mtg., Las Vegas, Nevada, April 1986.
44. Sigli, C. and Sanchez, J.M., "Calculation of the Energy of Formation and Phase Diagram of Transition Metal Binary Alloys," *American Physical Society,* Las Vegas, Nevada, April 1986.
45. Hawkins, R.J., Sanchez, J.M., and Robbins, M.O., "Electronic Structure Calculations of Binary Alloy Phase Diagrams," *American Physical Society,* Las Vegas, Nevada, April 1986.
46. Sanchez, J.M. and Moran-Lopez, J.L., "Ordering at Cu_3Au Surfaces," *American Physical Society,* Las Vegas, Nevada, April 1986.

47. Moran-Lopez, J.L., Sanchez, J.M., and Mejia-Lira, F., "Finite Size Effects on the First-Order Phase Transition in fcc Binary Alloys," *American Physical Society,* Las Vegas, Nevada, March 1986.
48. Sigli, C. and Sanchez, J.M., "Cluster Variation Calculation of Stable and Metastable Equilibrium in AL-Li Alloys," *TMS-AIME Annual Mtg.*, New Orleans, LA, March 1986.
49. Sigli, C. and Sanchez, J.M., "Effect of Concentration Dependent Pair Interactions on Order-Disorder Reactions," *TMS-AIME Annual Mtg.*, New Orleans, LA, March 1986.
50. Loh, B., Sanchez, J.M., and Tien, J.K., "Equilibrium Antiphase Boundaries in $L1_2$ Ordered Alloys," *TMS-AIME Annual Mtg.*, New Orleans, LA, March 1986.
51. Eng, S., Vignoul, G.E., Tien, J.K., and Sanchez, J.M., "Understanding the Effects of Refractory Elements on the Gamma-Prime Strengthening Phase in Nickel-Base Superalloys," *TMS-AIME Annual Mtg.*, New Orleans, LA, March 1986.
52. Hawkins, R.J., Robbins, M.O., and Sanchez, J.M., "Electronic Structure Calculations of Binary Alloy Phase Diagrams," *TMS-AIME Annual Mtg.*, New Orleans, LA, March 1986.
53. Sanchez, J.M. and Moran-Lopez, J.L., "First Order Transitions in Surfaces of Ising Ferromagnets with FCC structures," *XXX Congreso Nacional de Fisica, Sociedad Mexicana de Fisica,* Merida, Yucatan, Mexico, October 1987.
54. Contreras-Solarios, D.A., Mejia-Lira, F., Moran-Lopez, J.L., and Sanchez, J.M., "Phase Diagrams of BCC Magnetic Alloys," *XXX Congreso Nacional de Fisica, Sociedad Mexicana de Fisica,* Merida, Yucatan, Mexico, October 1987.
55. Carlsson, A.E. and Sanchez, J.M., "Thermodynamic Potentials and Phase Diagram for Ni-Al from Supercell Total Energy Calculations," *American Physical Society*, New York, New York, March 1987.
56. Sanchez, J.M. and Moran-Lopez, J.L., "Surface First-Order Phase Transitions in fcc Ising Ferromagnets," *American Physical Society*, New York, New York, March 1987.
57. Tso, N.C. and Sanchez, J.M., "Continuous Ordering Reactions in NiAl/Ni_2AlTi Dual Phase Alloys," *Materials Research Society*, Boston, Massachusetts, November 1988.
58. Wu, Y.P., Sanchez, J.M., and Tien, J.K., "Microsegregation to Antiphase Boundaries in Monolitic γ' Phase with Ternary Additions," *Materials Research Society,* Boston, Massachusetts, November 1988.
59. Contreras-Solarios, D.A., Mejia-Lira, F., Moran-Lopez, J.L., and Sanchez, J.M., "A Study of Magnetic Phases of BCC Binary Alloys," *International Conference on Magnetism*, Paris, France, July 1988.
60. Sanchez, J.M., Moran-Lopez, J.L., Leroux, C., and Cadeville, M.C., "Chemical and Magnetic Ordering in CoPt," *International Conference on Magnetism*, Paris, France, July 1988.
61. Moran-Lopez, J.L. and Sanchez, J.M., "Surface Ferromagnetism in Close-Packed Structures," *American Physical Society,* Louisiana, March 1988.
62. Contreras-Solarios, D.A., Mejia-Lira, F., Moran-Lopez, J.L., and Sanchez, J.M., "Modeling Phase Diagrams of BCC Magnetic Alloys," *American Physical Society,* New Orleans, Louisiana, March 1988.
63. Kosugi, M., and Sanchez, J.M., "Ordering Ground State Structures in Transition Metal Alloys," *American Physical Society,* New Orleans, Louisiana, March 1988.
64. Sanchez, J.M., and Moran-Lopez, J.L., "Oxygen Order-Disorder Transition in the Superconductor $YBa_2Cu_3O_{6+\delta}$," *American Physical Society,* New Orleans, Louisiana, March 1988.
65. Sanchez, J.M., Mejia-Lira, F., and Moran-Lopez, J.L., "Oxygen Ordering in High-Tc Superconductors," *XI Congress of Condensed Matter Physics*, Caxambu, Minas Gerais, Brazil, May 9-13, 1988.
66. Sanchez, J.M., Mejia-Lira, F., and Moran-Lopez, J.L., "Structural Transition and Oxygen Ordering in $YBa_2Cu_3O_{6+x}$," *Latin-American Conference on High Temperature Superconductivity,* Rio de Janeiro, Brazil, May 4-6, 1988.
67. Gyurko, A.M. and Sanchez, J.M., "Deformation Behavior of Very High Melting Ll_2 Intermetallic Compounds," *Materials Research Society*, Boston, Massachusetts, December, 1992.
68. Barth, E.P. and Sanchez, J.M., "The Elevated Temperature Mechanical Properties of Intermetallics "Based on Nb_2Al," *Materials Research Society*, Boston, Massachusetts, December, 1992.

69. Gyurko, A.M., Tien, J.K., and Sanchez, J.M., "Understanding the High Temperature Behavior of Ir_3Zr and Ir_3Nb," *AIME-TMS Fall Meeting*, Chicago, Illinois, November, 1992.
70. Becker, J.D., Sanchez, J.M., and Tien, J.K., "Properties of Metastable Phases Using Ab-initio Methods," *TMS-Annual Meeting*, San Diego, California, March 1992.
71. Sanchez, J.M., "Structural Stability of Transition Metals," *CALPHAD XXII*, Barcelona, Spain, May 1993.
72. Becker, J.D. and Sanchez, J.M., "First-Principles Study of Phase Stability in Zirconium-Niobium-Ruthenium," *Symposium on the Theory of Materials Properties*, *Materials Research Society*, San Francisco, California, April 1993.
73. Watson, R.E., Weinart, M., Sanchez, J.M., and Craievich, P.J., "The (Non)Metastability of Non-Equilibrium Phases," Materials Research Society, Boston, Massachusetts, November 1994.
74. Diaz-Ortiz, A., Moran-Lopez, J.L., Sanchez, J.M., Kim, T.H., and Cadevil, M.C., "The spatial and magnetic ordering in pseudo-ternary alloys: theory and experiment," Joint meeting of the Canadian, American and Mexican Physical Societies, C.A.M. 94, Cancun, Q.R. Mexico, September 26-30, 1994
75. Aguilera-Granja, F., Moran-Lopez, J.L., and Sanchez, J.M., "Simulations in Ising square antiferromagnets," Joint meeting of the Canadian, American, and Mexican Physical Societies, C.A.M. 94, Cancun, Q.R. Mexico, September 1994.
76. Sanchez, J.M., "Modeling of Magnetic Properties of Heusler Alloys," Joint meeting of the American, Canadian and Mexican Physical Societies, Cancun, Mexico, September 1994.
77. Freitas, C.A. and Sanchez, J.M., "Characterization of the Mechanical Properties of Three Ternary Alloys in The Ir-Nb-Zr Intermetallic System," Materials Research Society, Boston, Massachusetts, November 1994.
78. Freitas, C.A. and Sanchez, J.M., "Mechanical Properties and Phase Stability in Ir-Zr-Nb Intermetallics," *Symposium on Interstitial and Substitutional Effects in Intermetallics,* The Minerals Metals and Materials Society, Cleveland, OH, November 1, 1995.
79. Jakubenas, K.J., Sanchez, J.M., Lee, Y.L., Shaarawi, M.S., and Marcus, H.L., "Selective Area Laser Deposition of Titanium Oxide," *Solid Free Form Fabrication Symposium*, Austin, TX, August 14, 1996.
80. Noel, M.S., Sanchez, J.M., and Kovar, D., "Crucibles for Casting Molten Pu," Amarillo Researchers Conference, Amarilllo, TX, June 1999.
81. Noel, M.S., Gallegos, J., Sanchez, J.M., and Kovar, D., "Laser CVD of TiC on Ta," American Ceramic Society's Annual Meeting (St. Louis), May 2000.
82. Sanchez, J.M., "Research in Nano structured Materials: General Overview" at Workshop on "Science and Technology of Nano structured Materials: Towards a National Program", at Instituto Potosino de Investigacion Cientifica y Tecnologica, San Luis Potosi, Mexico, May 2002.
83. Sanchez, J.M., "The Cluster Expansion Method: First Principles or Phenomenology?" CALPHAD XL, Rio de Janeiro, Brazil, 2011.
84. Sanchez, J.M., "The Cluster Expansion: Its Foundations and Use in First Principles Thermodynamics of Alloys," Workshop on New Aspects of Low Dimensional Phsics, Instituto Potosino de Investigaciones Cientificas y Tecnologicas," San Luis Potosi, Mexico, January 28-29, 2016.
85. Sanchez, J.M. and Mohri, T., "Approximate solutions to the cluster variation free energies by the variable basis cluster expansion," CALPHAD XVL, Awaji Island, Japan, May 29 – June 3, 2016.
86. Sanchez, J.M. and Peterson, R.A., "Transdisciplinarity in Higher Education: Accomplishments and Remaining Challenges," The ATLAS International Conference, Xi'an Jiaotong-Liverpool University, Suzhou, China, May 29-June 2, 2016.
87. Sanchez, J.M., "Concentration Dependent Cluster Interactions in the Variable Basis Cluster Expansion," International Union of Materials Research Societies - ICEM 2016, Singapore, June 4-8, 2016.
88. Sanchez, J.M., "Variable Basis Cluster Expansion: A Representation of the Energy of Disordered Alloys from First Principles," Thermodynamics of Alloys, Santos, Brazil, September 5-8, 2016.
89. Sanchez, J.M. "Configurational energy of formation of alloys: Ising models vs the Cluster Expansion," CALPHAD XVLI, Saint Malo, France, June 11 – June 16, 2016.

RESEARCH TOPICS:

Electronic, thermodynamic and structural properties of materials including intermetallic compounds, magnetic and non-magnetic alloys, thin films and magnetic multilayers. Primary interest is the development and Application of first principles computational methods for the construction of phase diagrams of multicomponent material systems. Other research interests include the development of laser-controlled selective chemical vapor deposition processes for metals, alloys and ceramics.

GRANTS AND CONTRACTS

Pratt & Whitney: "Modeling of Selective Area Laser Deposition Processes," $229, 000, 07/01/95 - 06/30/98.
National Science Foundation: "First U.S.A/Argentina Bilateral Symposium on Materials Science and Engineering," $31,450, 04/15/95 - 09/30/96.
National Science Foundation: "U.S.A. - Mexico Workshop: Theory and Applications of the Cluster Variation and Path Probability Methods," $9,174, 07/01/95 - 06/30/96.
Texas Advanced Technology Program: "Modeling of Selective Area Laser Deposition Processes," $229, 000, 04/01/95 - 08/31/96.
National Science Foundation: "First-Principles Calculation of Ternary Phase Diagrams," $237,000, 12/01/91 - 05/31/95.
National Science Foundation: "Theoretical Study of Surfaces and Magnetic Alloys," $15,093, 03/01/92 - 08/31/94.
Hokkaido University: "Pseudostable Phases in Alloys," $107,211, 10/24/90 - 07/26/95.
DOD-Navy: "Understanding the High Temperature Behavior of Very High Melting Intermetallics," $429,049, 10/01/89 - 12/31/93.
Nion Mining: "Materials Research Program," $93,000, 10/01/89 - 10/01/94.
Nion Mining: "Electron Beam Cold Hearth Refined Material," $100,000, 10/05/90 - 10/04/94.
Electric Power Research Institute: "Microstructural Effects on the Corrosion Behavior of 1N718 and Related Superalloys", $110,510, 10/31/91 - 10/31/93.
National Science Foundation: "Workshop on Magnetism, Magnetic Alloys and their Applications," $11,160, 08/01/93 - 07/31/94.
Ford Motor Company: "Damage Storage Mechanisms in the Lead-Tin Solders," $25,000, 08/13/90 - 08/12/93.
DOD- Air Force: "Developing and Understanding the High Temperature Behavior of Niobium Aluminides and Niobium Aluminide Composites," $369,998, 12/01/89 - 05/31/93.
Wyman-Gordon Foundation: "Fellowship Award for Students in Metallurgy, Materials Engineering and Mechanical or Manufacturing Engineering," $15,000, 10/04/89 - 12/31/92.
NASA: "Investigation of Diffusion Barriers in Tungsten/Niobium Composites," $15,093, 03/01/92 - 02/28/94.
Motorola Inc.: "Reliability Design of IC Packages Subjected to Thermomechanical Loading," $43,000, 09/01/89 - 12/31/92.
Mitsubishi Materials American Corp.: "Understanding and Controlling of Silicon Growth by Remote Sensing," $32,266, 09/01/89 - 12/31/92.
National Science Foundation: "First Bilateral U.S.-Mexico Symposium in Materials Science and Engineering," $9,252, 08/15/91 - 07/31/92.
Amarillo National Resource Center: “Laser-Assisted Chemical Vapor Deposition of Ceramic Coatings for Plutonium Processing,” $175,830, 1/1/98-2/28/02 (with D. Kovar, C. James, and D. Kolman).

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