

CURRICULUM VITAE

Vicente A. Talanquer

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ACADEMIC STUDIES

Bachelors of Science in Chemistry, 1985

08/81-06/85 Universidad Nacional Autónoma de México (UNAM).
Thesis: Simple model for an electrolyte. Advisor: Carmen Varea

Masters of Science in Chemistry (Physical Chemistry), 1987

08/85-08/87 Universidad Nacional Autónoma de México (UNAM).
Thesis: Sublattice ordered phases of the Griffith's three component model.
Advisor: Carmen Varea

Doctorate of Philosophy in Chemistry (Physical Chemistry), 1992

08/89-10/92 Universidad Nacional Autónoma de México (UNAM).
Thesis: Bulk and interfacial properties of reacting and associating systems.
Advisor: Alberto Robledo

ACADEMIC POSITIONS

Research Assistant

01/87-08/88 School of Chemistry, Universidad Nacional Autónoma de México.

Professor

08/88-01/92 School of Chemistry, Universidad Nacional Autónoma de México.
Assistant Professor (Tenure Track).
01/92-01/98 Associate Professor A (Tenured).
01/98-01/00 Associate Professor B (Tenured).

Associate Professor

02/00-05/06 Department of Chemistry, University of Arizona (Tenure Track).
08/06-present Department of Chemistry, University of Arizona (Tenured)

Secondary School Teacher

08/87-06/99 Instituto Escuela, Mexico City. (*4 to 6 hours a week*).

Post-Doctorate

10/92-09/95 James Frank Institute, University of Chicago. Advisor: David Oxtoby

Visiting Scholar

June-July 96-03 James Frank Institute, University of Chicago.

HONORS AND AWARDS

- 11/86 **Best Undergraduate Student in Chemistry** (First in the class of 1981-1985). *UNAM*.
09/89 **Best Masters Student in Chemistry** (First in the class of 1985-1987). *UNAM*.
10/96 **Best Doctoral Student in Chemistry** (First in the class of 1987-1989). *UNAM*.
90/01 **Member of the National Research System of Mexico**. National Researcher.
Candidate: 1990-1993. Level I: 1993-1999. Level II: 1999 to 2001.
05/97 **First place in the national contest “Science History for Secondary School Students.”**
The Mexican Academy of Sciences, May 1997.
1998 **Outstanding Young Professor in Physical Sciences Education.** *UNAM*.
2004 **Early-Career Teaching Award.** College of Science, University of Arizona.
2006 **Five-Star Teaching Award.** University of Arizona.
2007 **Leicester & Kathryn Sherrill Creative Teaching Award.** University of Arizona.

PUBLICATIONS

*indicates published as graduate student; +student co-author.

Area: Science and Chemistry Education

Textbooks

1. V. Talanquer. *Fractus, Fracta, Fractal*. [Popular science book on fractals]. FCE. Colección la Ciencia desde México. No. 147. México, 1996. (7,000 copies)
 2. H. García, G. Irazoque and V. Talanquer. *Introducción a la Física y a la Química*. [7th grade, junior high school physics and chemistry textbook]. Fondo de Cultura Económica. México, 1996. (30,000 copies)
 3. V. Talanquer, A. M. Martínez and G. Irazoque. *Química 3*. [9th grade, junior high school chemistry textbook]. Ed. Santillana. Mexico, 1997. (60,000 copies)
- [Books 4-7]: One of five authors selected to write the natural sciences textbooks used by *all* elementary schools in Mexico and distributed free of charge to the students. Published by the Secretary of Public Education. Responsible for the areas of *Physical Sciences* and *Science, Technology and Society*.
4. A. Barahona, R. M. Catalá, J. A. Chamizo, B. Rico and V. Talanquer. *Ciencias Naturales. Tercer Grado*. [3rd grade, elementary school]. SEP. México, 1996. (2,500,000 copies/year)
 5. A. Barahona, R. M. Catalá, J. A. Chamizo, B. Rico and V. Talanquer. *Ciencias Naturales. Cuarto Grado*. [4th grade, elementary school]. SEP. México, 1997. (2,989,000 copies/year)
 6. A. Barahona, R. M. Catalá, J. A. Chamizo, B. Rico and V. Talanquer. *Ciencias Naturales. Quinto Grado*. [5th grade, elementary school]. SEP. México, 1998. (2,903,750 copies/year)
 7. A. Barahona, R. M. Catalá, J. A. Chamizo, B. Rico and V. Talanquer. *Ciencias Naturales. Sexto Grado*. [6th grade, elementary school]. SEP. México, 1999. (2,797,000 copies/year)
 8. V. Talanquer and G. Sarmiento. *Física 2*. [8th grade, junior high school physics textbook]. Ed. Nuevo México. México, 1999.
 9. V. Talanquer and A. Cervantes. *Ciencias Naturales*, en Monografías para todo el Año, 6to. [Natural Sciences, in Readings and Homework for the Whole Year, 6th grade]. Ed. Santillana. México, 2000.
 10. V. Talanquer. *Ciencia o Ciencia Ficción* [Science or Science Fiction]. Ed. Santillana. México, 2003.

Chapters in Books

1. A. Garritz and V. Talanquer, Advances and Obstacles to the Reform of Science Education in Secondary Schools in Mexico, in *Science and Environment Education Views from Developing Countries*, Ware, Sylvia A. (Ed.) 75-92 pp. Secondary Science Series, World Bank, 1999.
2. V. Talanquer. El vapor sobre el espejo [Vapor on a mirror]. Chapter VI, *Estampas de la Ciencia II*. p 208-245. FCE. Colección la Ciencia desde México, No. 174. México, 1999 (20,000 copies).

Peer-Reviewed Journal Articles

1. V. Talanquer. Física para Químicos [Physics for chemists]. *Educación Química*. **1** (3) 134 (1990).
2. V. Talanquer. ¿Qué pasa en nuestra Secundaria? [What is happening in our secondary schools?]. *Educación Química*. **1** (2) 92 (1990).
3. V. Talanquer and G. Irazoque. Transiciones de fase y universalidad [Phase transitions and universality]. *Educ. quím.* **2** (2) 641 (1991).
4. V. Talanquer and G. Irazoque. Fractales [Fractals]. *Educ. quím.* **2** (3) 114 (1991).
5. V. Talanquer and G. Irazoque. Auto-organización I. El Problema de la convección [The problem of convection]. *Educ. quím.* **2** (4) 166 (1991).
6. V. Talanquer and G. Irazoque. Auto-organización II. Reacciones oscilantes [Oscillating reactions]. *Educ. quím.* **3** (1) 25 (1992).
7. V. Talanquer and G. Irazoque. Auto-organización III. Ondas químicas [Chemical waves]. *Educ. quím.* **3** (2) 89 (1992).
8. ⁺P. Roquero, V. Talanquer and G. Irazoque. ¿Cuándo moja? ¿Cuándo no? [When is it wet? When isn't it?]. *Educ. quím.* **3** (3) 214 (1992).
9. ⁺F. Cortés, ⁺A. Gamboa, V. Talanquer and G. Irazoque. Caoticidades [Chaos]. *Educ. quím.* **3** (4) 258 (1992).
10. ⁺J. Córdoba, V. Talanquer and G. Irazoque. Interfases caprichosas [Capricious interphases]. *Educ. quím.* **4** (1) 32 (1993).
11. ⁺K. Padilla, V. Talanquer and G. Irazoque. Del incoloro al rojo a través del equilibrio [Chemical equilibrium]. *Educ. quím.* **4** (2) 74 (1993).
12. V. Talanquer. Química en la educación secundaria [Chemistry in secondary education]. *Educ. quím.* **4** (3) 156 (1993).
13. ⁺Y. Hueda, G. Irazoque and V. Talanquer. Los anillos del tiempo [Liesegang rings]. *Educ. quím.* **4** (4) 202 (1993).
14. V. Talanquer and G. Irazoque. Fractals: to know, to do, to simulate. *The Physics Teacher*. **31** (2) 72 (1993).
15. V. Talanquer. A Microcomputer simulation of the Liesegang phenomena. *J. Chem. Ed.* **71**, 58 (1994).
16. ⁺I. Tubert and V. Talanquer. Sobre adsorción [Adsorption]. *Educ. quím.* **8** (4) 186 (1997).
17. ⁺F. Barrios, ⁺S. Granados and V. Talanquer. ¿Cómo se forman los cristales? [How do crystals form?]. *Educ. quím.* **9** (3) 129 (1998).
18. V. Talanquer. El movimiento CTS en México: ¿vencedor vencido? [The STS movement in Mexico: A defeated winner?]. *Educ. quím.* **11** (4) 381 (2000).
19. V. Talanquer. Science survivors. *Science and Children*. **39** (4) 36 (2002).
20. V. Talanquer. One foot=one cenxocpalli: Measuring in the pre-hispanic world. *Science Scope*. **25** (7) 12 (2002).
21. V. Talanquer. Nucleation in gas-liquid transitions. *J. Chem. Ed.* **79**, 877 (2002).
22. V. Talanquer. Minimizing Misconceptions: Tools for identifying patterns of reasoning. *The Science Teacher*. **69** (8) 46 (2002).

23. I. Novodvorsky, D. Tomanek, V. Talanquer, and T. F. Slater, A new model of physics teacher preparation. *Journal of Physics Teacher Education Online (JPTEO)*. **1** (2) 10 (2002).
24. D. Tomanek, V. Talanquer, I. Novodvorsky, T. F. and Slater. Responding to the call for change: The new college of science teacher preparation program at the University of Arizona. *Cell Biology Education*. 2(1):29-34. (2003). Bethesda, MD: American Society for Cell Biology.
25. V. Talanquer, I. Novodvorsky, T. F. Slater, and D. Tomanek. A stronger role for science departments in the preparation of future chemistry teachers. *J. Chem. Ed.* **80**, 1168 (2003).
26. V. Talanquer. Formación Docente. ¿Qué conocimiento distingue a los buenos maestros de química? [Teacher Preparation: What do good chemistry teachers know?] *Educ. quím.* **15** (1) 52 (2004).
27. V. Talanquer and D. Morgan. Learning to teach: The role of evidence. *Journal of College Science Teaching*. **34** (March/April), 28 (2005).
28. J. Pollard and V. Talanquer. Interactive Digital Overheads: Dynamic teaching tools for the chemistry classroom. *The Chemical Educator*. **10**, 36 (2005).
29. V. Talanquer. Recreating a Periodic Table: A Tool for Developing Pedagogical Content Knowledge. *The Chemical Educator*. **10**, 95 (2005).
30. V. Talanquer. El Químico Intuitivo. [The Intuitive Chemist] *Educ. quím.* 16(4) 114 (2005).
31. V. Talanquer. Reclaiming the central role of equations of state in thermodynamics. *J. Chem Educ.* **83**, 127 (2006).
32. V. Talanquer. Common sense chemistry: A model for understanding students' alternative conceptions. *J. Chem. Educ.* **83**(5), 811 (2006).
33. V. Talanquer. Propiedades Emergentes: Un Reto para el Químico Intuitivo [Emergent Properties: A Challenge for the Intuitive Chemist] *Educ. quím.* **17**, 315 (2006).
34. [†]M. Veron and V. Talanquer. Classification schemes used by chemistry students to identify chemical substances. *International Journal of Science Education*. **29**(5), 643 (2007); *Erratum* **29**(7), 935 (2007).
35. [†]M. Veron and V. Talanquer. A₂: Element or Compound? *J. Chem Ed.* **84**(5), 880 (2007).
36. V. Talanquer, D. Tomanek, and I. Novodvorsky. Revealing student teachers' thinking through dilemma analysis. *Journal of Science Teacher Education*. **18**(3), 399 (2007)
37. V. Talanquer. Explanations and teleology in chemistry education. *International Journal of Science Education*. **29**(7), 853 (2007).
38. V. Talanquer, D. Morgan, [†]J. Maeyer, and [†]K. Young. Linking general education and science teacher preparation. *Journal of College Science Teaching*. (Accepted, 11/06)
39. [†]M. Stains and V. Talanquer. Classification of chemical reactions Stages of expertise. *Journal of Research in Science Teaching*. (Accepted, 04/07).

Area: Physical Chemistry

Chapters in Books

1. V. Talanquer. Statistical Mechanics of Fluid Interfaces. In D. Petsev (Ed.) *Emulsions: Structure, Stability, and Interactions*. Chapter 1. Academic Press, 2004.

Peer-Reviewed Journal Articles

1. *V. Talanquer, C. Varea, and A. Robledo. Sublattice ordered phases of the Griffith's three component model. *Phys. Rev. B* **39**, 7016 (1989).
2. *V. Talanquer, C. Varea, and A. Robledo.. Global phase diagram for binary alloys with one magnetic component. *Phys. Rev. B* **39**, 7030 (1989).

3. *V. Talanquer, C. Varea, and A. Robledo. Sublattice-ordered phases in a lattice model for a micellar solution. *Phys. Rev. B* **39**, 7039 (1989).
4. *A. Robledo, C. Varea, and V. Talanquer. Curvature interfacial transitions at amphiphile monolayers and their possible relation to the onset of micelle formation. *Phys. Rev. A* **43**, 5736 (1991).
5. *V. Talanquer. Global phase diagram for reacting systems. *J. Chem. Phys.* **96**, 5408 (1992).
6. V. Talanquer and D. W. Oxtoby. Nucleation in dipolar fluids: Stockmayer fluids. *J. Chem. Phys.* **99**, 4670 (1993).
7. V. Talanquer and D. W. Oxtoby. Dynamical density functional theory of gas-liquid nucleation. *J. Chem. Phys.* **100**, 5190 (1994).
8. [†]C. Pérez, [†]P. Roquero, and V. Talanquer. Wetting properties of simple binary mixtures and systems with one self-associating component. *J. Chem. Phys.* **100**, 5913 (1994).
9. V. Talanquer and D. W. Oxtoby. Nucleation of bubbles in binary fluids. *J. Chem. Phys.* **102**, 2156 (1995).
10. V. Talanquer and D. W. Oxtoby. Density functional analysis of phenomenological theories of gas-liquid nucleation. *J. Phys. Chem.* **99**, 2865 (1995).
11. [†]R. M. Nyquist, V. Talanquer, and D. W. Oxtoby. Density functional theory of nucleation: A semiempirical approach. *J. Chem. Phys.* **103**, 1175 (1995).
12. V. Talanquer and D. W. Oxtoby. Nucleation in molecular and dipolar fluids: interaction site model. *J. Chem. Phys.* **104**, 3686 (1995).
13. V. Talanquer and D. W. Oxtoby. Heterogeneous nucleation of molecular and dipolar fluids. XIV Winter Meeting on Statistical Physics. *Physica A* **220**, 74 (1995).
14. A. Laaksonen, V. Talanquer, and D. W. Oxtoby. Nucleation: Measurements, theory, and atmospheric applications. *Ann. Rev. Phys. Chem.* **46**, 489 (1995).
15. V. Talanquer and D. W. Oxtoby. Nucleation on a solid substrate: A density functional approach. *J. Chem. Phys.* **104**, 1483 (1996).
16. V. Talanquer and D. W. Oxtoby. Critical clusters in binary mixtures: A density functional approach. *J. Chem. Phys.* **104**, 1993 (1996).
17. [†]E. Carrillo, V. Talanquer, and M. Costas. Wetting transition at the liquid-air interface of methanol-alkane mixtures. *J. Phys. Chem.* **100**, 5888 (1996).
18. V. Talanquer and D. W. Oxtoby. Nucleation in the presence of an amphiphile: A density functional approach. *J. Chem. Phys.* **106**, 3673 (1997).
19. V. Talanquer. A new phenomenological approach to gas-liquid nucleation based on the scaling properties of the critical nucleus. *J. Chem. Phys.* **106**, 9957 (1997).
20. V. Talanquer and D. W. Oxtoby. Crystal nucleation in the presence of a metastable critical point. *J. Chem. Phys.* **109**, 223 (1998).
21. [†]I. Napari, A. Laaksonen, V. Talanquer and D. W. Oxtoby. A density functional study of liquid-liquid interfaces in partially miscible systems. *J. Chem. Phys.* **110**, 5906 (1999).
22. V. Talanquer and D. W. Oxtoby. A simple off-lattice model for microemulsions. *Faraday Transactions*. **112**, 91 (1999).
23. V. Talanquer and D. W. Oxtoby. Gas-liquid nucleation in associating fluids. *J. Chem. Phys.* **112**, 851 (2000).
24. V. Talanquer and D. W. Oxtoby. A density functional approach to nucleation in micellar solutions. *J. Chem. Phys.* **113**, 7013 (2000).
25. [†]K. Padilla and V. Talanquer. Nucleation on aerosol particles. *J. Chem. Phys.* **114**, 1319 (2001).
26. V. Talanquer and D. W. Oxtoby. Nucleation in a slit pore. *J. Chem. Phys.* **114**, 2793 (2001).
27. V. Talanquer, [†]C. Cunningham, and D. W. Oxtoby. Bubble Nucleation in Binary Mixtures: A Semiempirical Approach. *J. Chem. Phys.* **114**, 6759 (2001).

28. V. Talanquer and D. W. Oxtoby. Nucleation of pores in amphiphile bilayers. *J. Chem. Phys.* **118**, 872 (2003).
29. V. Talanquer and D. W. Oxtoby. Formation of Droplets on Non-Volatile Soluble Particles. *J. Chem. Phys.* **119**, 921 (2003).
30. [†]B. Husowitz and V. Talanquer. Nucleation in Cylindrical Capillaries. *J. Chem. Phys.* **121**, 8021 (2004).
31. V. Talanquer. Nucleation in a simple model for protein solutions with anisotropic interactions. *J. Chem. Phys.* **122**, 084704 (2005).
32. V. Talanquer. Phase behavior of self-associating fluids with weaker dispersion interactions between bonded particles. *J. Chem. Phys.* **122**, 154510 (2005).
33. [†]B. Husowitz and V. Talanquer. Nucleation on cylindrical plates: Sharp transitions and double barriers. *J. Chem. Phys.* **122**, 194710 (2005).
34. V. Talanquer. Phase transitions in DNA-linked nanoparticle assemblies: A decorated lattice model. *J. Chem. Phys.* **125**, 194701 (2006).
35. [†]B. Husowitz and V. Talanquer. Solvent density inhomogeneities and solvation free energies in supercritical diatomic fluids: A density functional approach. *J. Chem. Phys.* **126**, 054508 (2007).
36. V. Talanquer. Nucleation of Self-Associating Fluids: Free versus Activated Association. *J. Phys. Chem. B* **111**, 3438 (2007).
37. [†]B. Husowitz and V. Talanquer. Filling and emptying transitions in cylindrical channels: A density functional approach. *J. Chem. Phys.* (Accepted, 04/23/07)

EDUCATIONAL MATERIALS

1. V. Talanquer and G. Irazoque. Simulation program for fractal growth. *Physics Teacher's CD-ROM Toolkit*. 1993.
2. V. Talanquer y C. Guzmán. Radiactividad. [Radiactivity]. *A Ciencia Cierta*. No. 1, 1999. UNAM, México.
3. V. Talanquer y A. M. Martínez. La Lluvia Ácida [Acid Rain]. *A Ciencia Cierta*. No. 2, 1999. UNAM, México.
4. V. Talanquer. Los Polímeros. [Polymers]. *A Ciencia Cierta*. No. 3, 2000. UNAM, México.
5. J. Pollard and V. Talanquer. *Interactive Digital Overheads*. 2003-2005. <http://www.chem.arizona.edu/chemt/ido.html>
6. NSF-STC of Materials and Devices for Information Technology. *The Point-Learning Modules and Interactive Manipulatives*. 2003-2005. <http://stc-mditr.org/thepoint/>

SCHOLARLY PRESENTATIONS (Last five years)

Presenter name is underlined.

Invited

- Novel approach to the preparation of secondary chemistry teachers. 223rd ACS National Meeting (Orlando, Florida. April 7-11, 2002).
- Understanding Misconceptions in Chemistry. Arizona Conference on Exemplary Introductory Science Courses for Non-Science Majors. (Pima Community College, Tucson, AZ. August 15, 2003).
- Nucleation on Aerosol Particles. (University of Oregon. February 23, 2004).

- *Common Sense Chemistry*. IV International Meeting on Chemistry Teaching at College and Pre-College Levels. (Mérida, Yucatán, México. November 18, 2005).
- *Nucleation in the Presence of a Competing Metastable Phase*. (University of New Mexico. March 7, 2006).
- *Nucleation in the Presence of a Competing Metastable Phase*. 80th ACS Colloid and Surface Science Symposium. (University of Colorado, Boulder. June 18-21, 2006).
- *How do our students think?* 25th Annual High School-University Chemistry Teacher Conference. (University of Colorado, Boulder. November 4, 2006).
- *How do our students think?* 7th Biennial National Conference of Natural Science Teachers. (Centro de Convenciones, Puebla, México. November 9, 2006).

Contributed

- *Navigating our Roles in a New Context: Building a Secondary Science Teacher Preparation Program*. 2002 NARST Annual International Conference (New Orleans, LA. April 7-10, 2002). V. Talanquer, D. Tomanek, I. Novodvorsky, and T. Slater.
- *Density Functional Approach to Crystallization*. 223rd ACS National Meeting (Orlando, Florida. April 7-11, 2002). D. W. Oxtoby, D. Chekmarev, and V. Talanquer.
- *From novice to expert chemistry teacher: The role of personal knowledge structure*. 223rd ACS National Meeting. (Orlando, Florida. April 7-11, 2002). V. Talanquer.
- *Vertical integration of the chemistry curriculum*. 223rd ACS National Meeting (Orlando, Florida, April 7-11, 2002). V. Talanquer, S. Brown, M. A. Bruck, J. H. Enemark, A. B. Padias, J. R. Pollard.
- *Structure of knowledge of chemistry students: implications for teacher education*. 17th Biennial Conference on Chemical Education (BCCE) (Western Washington University. July 28-Aug 1, 2002). V. Talanquer.
- *A novel approach to the preparation of science teachers*. 17th Biennial Conference on Chemical Education (BCCE) (Western Washington University. July 28-Aug 1, 2002). V. Talanquer.
- *Formation of micelles and vesicles in surfactant solutions (Poster)*. Liquid Matter Conference (University of Konstanz, Germany. September 14-18, 2002). D. Oxtoby, P. Christopher, and V. Talanquer.
- *Common sense chemistry: The root of misconceptions*. 225th ACS National Meeting (New Orleans, LA. March 23-27, 2003). V. Talanquer.
- *Nucleation of pores in amphiphile bilayers*. 77th ACS Colloid and Surface Science Symposium. (Georgia Institute of Technology. June 15-18, 2003). V. Talanquer and D. W. Oxtoby.
- *Interactive Digital Overheads*. 227th ACS National Meeting. (Anaheim, CA. March 28-April 1, 2004). J. Pollard and V. Talanquer.
- *Common sense chemistry*. 2004 NARST Annual International Conference. (Vancouver, Canada. March 31-April 3, 2004). V. Talanquer.
- *Development of manipulable web environments to foster active learning in physical sciences*. 18th Biennial Conference on Chemical Education (BCCE). (Ames, Iowa. July 18-22, 2004). V. Talanquer.
- *Why do lemons taste different than oranges? The origin of our chemical senses*. 229th ACS National Meeting. (San Diego, CA. March 13-17, 2005).. V. Talanquer.
- *Exploring the classification schemes used by chemistry students to identify different types of substances*. 229th ACS National Meeting. (San Diego, CA. March 13-17, 2005). M. Veron and V. Talanquer.

- *Exploring student thinking when classifying chemical substances based on particulate representations of matter.* 2006 NARST Annual International Conference (San Francisco, CA. April 3-6, 2006). M. Veron and V. Talanquer.
- *Common-sense reasoning about chemical compounds: Additive versus emergent frameworks.* 2006 NARST Annual International Conference (San Francisco, CA. April 3-6, 2006). V. Talanquer.
- *The assessment on an initial science teacher preparation program.* 2006 NARST Annual International Conference (San Francisco, CA. April 3-6, 2006). I. Novodvorsky, V. Talanquer, and D. Tomanek.
- *Student teachers' thinking revealed in self-reported dilemmas.* 2006 NARST Annual International Conference (San Francisco, CA. April 3-6, 2006). D. Tomanek, V. Talanquer, and I. Novodvorsky.
- *Emergent properties: A challenge for the intuitive chemist.* 19th Biennial Conference on Chemical Education (BCCE). (Purdue University, OH. July 30-August 3, 2006). V. Talanquer.
- *The POINT: Interactive Web-based resources for the secondary school classroom.* 19th Biennial Conference on Chemical Education (BCCE). (Purdue University, OH. July 30-August 3, 2006). V. Talanquer, M. Satins, and R. Morgan-Theall.
- *"The World We Create": An experiment in teaching chemistry to non-science majors.* 19th Biennial Conference on Chemical Education (BCCE). (Purdue University, OH. July 30-August 3, 2006). K. Young, J. Maeyer, and V. Talanquer.
- *Studying the efficacy of an innovative approach to foster learning for prospective science teachers.* Biennial Conference on Chemical Education (BCCE). (Purdue University, OH. July 30-August 3, 2006). J. Maeyer, K. Young, and V. Talanquer.
- *Exploring student thinking when classifying chemical reactions.* 232nd ACS National Meeting. (San Francisco, CA. September 10-14, 2006). M. Stains and V. Talanquer.
- *Comparing experienced and prospective science teachers reasoning about assessment.* 2007 NARST Annual International Conference (New Orleans, LA. April 15-18, 2007). I. Novodvorsky, D. Tomanek, and V. Talanquer.
- *Classification of chemical reactions: The effect of expertise.* 2007 NARST Annual International Conference (New Orleans, LA. April 15-18, 2007). M. Stains and V. Talanquer.
- *Teleological explanations in chemistry teaching and learning.* 2007 NARST Annual International Conference (New Orleans, LA. April 15-18, 2007). V. Talanquer.

GRANTS AND CONTRACTS (Last five years)

Effort expressed in % of total academic time.

*Current grants

Federal

1. National Science Foundation (NSF). Awarded **\$37,013**. Grant proposal included in larger grant proposal in collaboration with Profesor David Oxtoby (Principal Investigator at the University of Chicago). *Dynamics of First-Order Phase Transitions*. 04/01/01-03/31/03. (10% effort).
2. National Science Foundation (NSF). Awarded **\$142,270**. *Development and Implementation of a Comprehensive Evaluation Model for Science Teacher Preparation Programs*. PI: Vicente Talanquer, Co-PIs: I. Novodvorsky, D. Tomanek. 06/01/01-05/31/04. (15% effort).
3. *National Science Foundation (NSF). Awarded over **\$200,000** as part of a multimillion dollar grant. *Science and Technology Center on Materials and Devices for Information Technology Research*. Responsible for the K-12 education program. 08/01/02-06/30/07. (8% effort).

4. National Science Foundation (NSF). Awarded **\$82,140**. *Dynamics of First-Order Phase Transitions*. PI (University of Chicago): David Oxtoby, PI (University of Arizona, Subcontract): Vicente Talanquer. 04/01/03-09/30/05. (10% effort).

State

5. Arizona Board of Regents (Eisenhower Program). Awarded **\$49,202**. *Partners in the Education of Preservice Science Teachers (PEPST)*. PI: Deb Tomanek, Co-PIs: I. Novodvorsky, V. Talanquer. 03/01/02-07/01/03. (3% effort).
6. Arizona Board of Regents (Learner Centered Education). Awarded, **\$25,000**. *Integrated Learning Website*. PI: Vicente Talanquer. 04/01/02-05/31/04. (5% effort).
7. Arizona Board of Regents (Improving Teacher Quality). Awarded **\$50,000**. *Strengthening the Connections between University and School Experiences in a Preservice Secondary Science Teacher Program*. PI: Deb Tomanek, Co-PIs: I. Novodvorsky, V. Talanquer. 03/01/03-06/30/04. (3% effort).
8. Arizona Board of Regents (Improving Teaching Quality). Awarded, **\$116,035**. *A professional development program for science teachers*. PI: Vicente Talanquer. 03/26/04-06/30/06. (10% effort).
9. *Arizona Board of Regents (Learner Centered Education). Awarded **\$24,948**. *The World We Create: Studying the efficacy of an innovative approach to foster learning for both non-science majors and prospective science teachers*. PI: Vicente Talanquer. 04/01/06-09/01/07. (10% effort).

Private

10. The Camille and Henry Dreyfus Foundation. Awarded, **\$20,000 + \$12,000** UA Matching funds. *Vertical Integration of the Chemistry Curriculum: An Internet Application*. PI: Vicente Talanquer. 01/01/02-06/01/04. (5% effort).
11. Private Donation (Ernest Polak). Donation: **\$40,000**. *Chemistry Teacher Exchange Program*. PI: Vicente Talanquer. August 2002. (1% effort; coordination).

SERVICE

Departmental Committees and Projects

- 2000-present *Chemical Education Committee*. Chair of this committee starting August 2003.
- 2001-present *Major Advisor* (Science Education option).
- 2001-2004 *Vertical Integration Project*. Chair of the efforts to develop web-based tools to vertically integrate the chemistry curriculum.
- 2001-2002 *Undergraduate Support Committee*.
- 2002-2004 *Preceptorship Program Coordinator*.
- 2003-2004 *Peer Review Committee*.

College Committees

- 2001-2003 *Graduate College Representative*. August 2001-2003.
- 2001-2004 *Faculty/Student Award Committee* in the College of Science, University of Arizona. Chair of this committee 2003-2004.
- 2000-present *CoS Teacher Preparation Program Team Meetings*.

National and International Service

- 1991-present *Editorial board member* for the journal *Educación Química* [Mexican journal of chemical education].
- August 1993 *Session Chair* (Nucleation and Phase Separation), Gordon Research Conference on the *Chemistry and Physics of Liquids*. Holderness School, Plymouth, NH.
- 2004-2006 *Strand 1 Coordinator*. *National Association for Research in Science Teaching*, NARST Annual Meeting (Strand on Students' Conceptions and Conceptual Change).

Ad Hoc Reviews

Journals:

- | | |
|---------------|---|
| 1991- present | <i>Educación Química</i> [Chemical Education]. (Mexico) |
| 2001- present | <i>Journal of Chemical Education</i> |
| 2004- present | <i>The Chemical Educator</i> |
| 2005- present | <i>Journal of Science Teacher Education</i> . |
| 2006-present | <i>Journal of Research in Science Teaching</i> |
| 1997- present | <i>Journal of Chemical Physics</i> |
| 2000- present | <i>Journal of Physical Chemistry</i> |
| 2006-present | <i>Langmuir</i> |
| 2006-present | <i>Physics Letters</i> |

Funding Agencies:

- | | |
|--------------|-----------------------------------|
| 2001-present | <i>Petroleum Research Fund</i> |
| 2003-present | <i>NSF (Chemistry Division)</i> |
| 2004-present | <i>U. S. Department of Energy</i> |

National Meetings:

- | | |
|--------------|---|
| 2001-present | <i>National Association for Research in Science Teaching</i>
(Annual meeting). |
|--------------|---|

Membership in Professional Societies

- American Chemical Society (ACS)
- National Association for Research in Science Teaching (NARST)
- Association for Science Teacher Education (ASTE)
- National Association of Science Teachers (NSTA)

OUTREACH (Last five years)

Local/State Outreach

- Multi-Initiative Dissemination Workshop*. Host of an NSF-funded workshop for General Chemistry instructors in the State of Arizona. U of A, Tucson, AZ. April 2002 (2 days).
- Inquiry-Based Activities*. Workshop for secondary school science teachers in the Marana District. Tucson, AZ. October 11, 2002 (4 hours).

- *Partners in the Education of Preservice Science Teachers (PEPST) workshop*. Workshop to develop the mentoring skills of inservice science teachers. U of A, Tucson, AZ. Summers of 2000, 2001, 2002, and 2003 (40 hours per workshop).
- *Fun with Chemistry*. Talk at Southside Community School, Tucson, AZ. December 4, 2003 (1 hour).
- *Let's Talk about Science*. Workshop for the College Academy for Parents, Sierra Middle School, Tucson, AZ. October 26, 2004 (2 hours).
- *Developing Manipulable Web Environments*. Workshop for secondary school teachers in the Tucson area. June-July 2004; July 2005 (80 hours each).
- *What do Chemists do?* Workshop for the College Academy for Parents, Challenger Middle School, Tucson, AZ. February 21, 2006 (2 hours).
- *Introduction to Chemistry*. Chemistry Sample Lecture. Peter and Pat Likins Day for Outstanding Seniors. University of Arizona, Tucson, AZ. November 18, 2006 (1 hour).

National/International Outreach

- *Learning: A Cognitive Perspective*. Workshop for chemistry faculty. School of Chemistry, National University of Mexico (UNAM). February 9-13, 2004 (20 hours).
- *Seeing is believing: Using simulations in the chemistry classroom*. Workshop for Mexican secondary school chemistry teachers. 7th Biennial National Conference of Natural Science Teachers. Centro de Convenciones, Puebla, México. November 9, 2006 (4 hours).