

Curriculum Vitae

10 May 2017

Identification

Name: Alan Barros de Oliveira.

Name in bibliography citations: de Oliveira, A. B.

Date of birth: 27 July 1979

Sex: Male

Marital Status: Married (two kids)

Citizenship: Brazilian

Contacts

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Education

Dr. Sci. in Physics - March 2004 to February 2008 - Universidade Federal do Rio Grande do Sul, Porto Alegre, RS, Brazil. Advised by Prof. Marcia C. Barbosa.

M. Sc. in Physics - June 2002 to January 2004 - Universidade Federal do Rio Grande do Sul, Porto Alegre, RS, Brazil. Advised by Prof. Marcia C. Barbosa.

B. Sc. in Physics - March 1998 to June 2002 - Universidade Federal da Bahia, Salvador, BA, Brazil.

Current position

Permanent position of Professor (equivalent to Associate Professor in USA) at Universidade Federal de Ouro Preto, Ouro Preto, MG, Brazil, since February 2009.

Temporary positions

Visiting Professor - Department of Chemistry, University of Edinburgh, Edinburgh, Scotland, UK, February 2015. Contact: Prof. Philip J. Camp.

Visiting Professor - Department of Chemistry, Indian Institute of Technology-Delhi, New Delhi, India, April 2012. Contact: Prof. Charusita Chakravarty.

Visiting Professor - Department of Chemistry, Indian Institute of Technology-Delhi, New Delhi, India, April 2011. Contact: Prof. Charusita Chakravarty.

Visiting Professor - Department of Chemistry, Indian Institute of Technology-Delhi, New Delhi, India, February 2010. Contact: Prof. Charusita Chakravarty.

Research Associate - Physics Department, Yeshiva University, New York, NY, USA, from October 2008 to February 2009. Contact: Prof. David Srolovitz.

Postdoc - Departamento de Física, Universidade Federal de Santa Catarina, Florianópolis, SC, Brazil, supervised by Prof. Wagner Figueiredo, from March 2008 to September 2008.

Temporary Professor (Equivalent to Adjunct Professor in USA) at Universidade Federal do Rio Grande do Sul, Porto Alegre, RS, Brazil, from July 2004 to August 2005.

Editorial work

- Member of the Editorial Board of the International Journal of Liquid State Sciences, since August 2008.
- Member of the Editorial Board of the Dataset Papers in Physics, since May 2012.

Consultant

- Referee for Journal of Alloys and Compounds, 2012
- Referee for Papers in Physics, 2012
- Referee for J. Chem. Phys., 2011-present
- Referee for Physica A, 2011.
- Referee for International Journal of Liquid State Sciences, 2009.
- Consultant *ad hoc* for the Brazilian science agency FACEPE, 2010-2012, 2014, 2017
- Consultant *ad hoc* for the Brazilian science agency CNPq, 2014

Scientometrics

Source: Web of Science

Search parameters: Author=((de Oliveira ab AND barbosa mc) OR (de Oliveira ab AND fortini a) OR (de Oliveira ab AND batista RJC))

Date of the search: 27 April 2017

- Results found: 26
- Sum of the Times Cited: 556
- Average Citations per Item: 21.38
- h-index: 13

Research Interests

We use computational techniques as well as mathematical treatments to investigate mechanical and electronic properties of

- complex fluids
- nano sctructures
- low dimensional systems (such as films and nanotubes)

Publications

30. H. Chacham, A. P. M. Barboza, A. B. de Oliveira, R. J. C. Batista, and B. R. A. Neves. *Onset of size-dependent flexural hardening of 2D materials* , Nat. Commun., Under Review (2017).
29. L. P. Martins , A. R. Paschoal , M. Matos , P. T. C. Freire , N. F. Andrade , A. L. Aguiar , J. Kong , B. Neves , A. B. de Oliveira , et al.. *Pressure-induced formation of two-dimensional diamond from graphene layers: a Raman spectroscopy evidence for the diamondene*, Nat. Commun., Accepted (2017).
28. R. J. C. Batista, E. A. S. Torres, A. B. de Oliveira, and M. C. Barbosa. *A coarse-grained model based on core-softened potentials for anomalous polymers*, J. Chem. Sci., In Press (2017).
27. J. Nichele, A. B. de Oliveira, L. S. de Brito Alves, and I. Borges Jr. *Accurate calculation of near-critical heat capacities C_p and C_v of argon using molecular dynamics* , J. Mol. Liq. **237**, 65 (2017).
26. J. A. Gonçalves, R. Nascimento, M. J. Matos, A. B. de Oliveira, H. Chacham, and R. J. C. Batista. *Edge-reconstructed, few-layered graphene nanoribbons: stability and electronic properties*, J. Phys. Chem. C **121**, 5836 (2017).
25. V. F. L. Filho, G. Machado, R. J. C. Batista, J. S. Soares, A. B. de Oliveira, C. K. B. de Vasconcelos, A. Lino, and T. M. Manhabosco. *Effect of TiO_2 Nanoparticles on Polyaniline Films Electropolymerized at Different pH*, J. Phys. Chem. C **120**, 14977 (2016).
24. J. Nichele, I. Borges Jr., A. B. de Oliveira, and L. S. de Brito Alves. *Molecular dynamics simulations of momentum and thermal diffusion properties of near-critical argon along isobars*, J. Supercr. Fluid. **114**, 46 (2016).

23. C. K. B. de Vasconcelos, R. J. C. Batista, Mc. da Rocha Régis, T. M. Manhobosco, and A. B. de Oliveira. *A simple model for solute-solvent separation through nanopores based on core-softened potentials*, Physica A **453**, 184 (2016).
22. A. B. de Oliveira, H. Chacham, J. S. Soares, T. M. Manhobosco, and R. J. C. Batista. *Vibrational G peak splitting in laterally functionalized single wall carbon nanotubes: Theory and molecular dynamics simulations*, Carbon **96**, 616 (2016).
21. C. K. Oliveira, E. F. A. Gomes, M. C. Prado, T. V. Alencar, R. Nascimento, L. M. Malard, R. J. C. Batista, A. B. de Oliveira, H. Chacham, A. M. de Paula, and B. R. A. Neves. *Crystal-oriented wrinkles with origami-type junctions in few-layer h-BN*, Nano Research **8**, 1680 (2015).
20. A. L. de Lima, L. A. M. Mussnich, T. M. Manhobosco, H. Chacham, R. J. C. Batista, and A. B. de Oliveira, *Soliton instability and fold formation in laterally compressed graphene*, Nanotechnology **26**, 045707 (2015).
19. R. J. C. Batista, A. B. de Oliveira, S. S. Carara, and H. Chacham. *Controlling the electrical response of carbon nanotubes deposited on diamond through the application of electric fields*, J. Phys. Chem. C **118**, 21599 (2014).
18. E. E. Moraes, T. M. Manhobosco, A. B. de Oliveira, and R. J. C. Batista. *Tunable band gap of boron nitride interfaces under uniaxial pressure*, J. of Phys.: Cond. Matt. **24**, 475502 (2012). [Editors Choice]
17. J. R. Bordin, A. B. de Oliveira, A. Diehl, and M. C. Barbosa. *Diffusion enhancement in core-softened fluid confined in nanotubes*, J. Chem. Phys. **137**, 084504 (2012).
16. P. T. Araujo, N. M. Barbosa Neto, H. Chacham, S. S. Carara, J. S. Soares, A. D. Souza, L. G. Cançado, A. B. de Oliveira, R. J. C. Batista, E. Joselevich, M. S. Dresselhaus, and A. Jorio. *In situ atomic force microscopy tip-induced deformations and Raman spectroscopy characterization of single-wall carbon nanotubes*, Nano Lett. **12**, 4110 (2012).
15. A. P. M. Barboza, C. K. Oliveira, T. F. D. Fernandes, E. H. M. Ferreira, B. S. Archanjo, R. J. C. Batista, A. B. de Oliveira, H. Chacham, and B. R. A. Neves. *Dynamic negative compressibility of few-layer graphene, h-BN and MoS₂*, Nano Lett. **12**, 2313 (2012).
14. Ronaldo J. C. Batista, Alan B. de Oliveira, Natália R. Pereira, Rafael Silva Paolini, and Taíse M. Manhobosco. *Boron Nitride Nanotubes as Templates for Half-Metal Nanowires*, J. Phys.: Cond. Matt. **24**, 165501 (2012).
13. E. Salcedo, A. B. de Oliveira, N. M. Barraz Jr, C. Chakravarty, and M. C. Barbosa. *Core-softened Fluids, Water-like Anomalies and the Liquid-Liquid Critical Points*, J. Chem. Phys. **135**, 044517 (2011).
12. A. B. de Oliveira, A. Fortini, S. V. Buldyrev, and D. Srolovitz. *Dynamics of the contact between a ruthenium surface with a single nanoasperity and a flat ruthenium surface: Molecular dynamics simulations*, Phys. Rev. B **83** 134101 (2011).
11. J. N. da Silva, E. Salcedo, A. B. de Oliveira, and M. C. Barbosa. *Effects of attractive interactions in the thermodynamic, dynamic and structural anomalies of a two length scales potential*, J. Chem. Phys. **133**, 244506 (2010).
10. R. J. C. Batista, A. B. de Oliveira, and D. L. Rocco. *Iron oxide doped boron nitride nanotubes: structural and magnetic properties*, J. Phys.: Cond. Matt. **22**, 355302 (2010).

9. A. B. de Oliveira, E. Salcedo, C. Chakravarty, and M. C. Barbosa. *Entropy, diffusivity and the energy landscape of a water-like fluid*, J. Chem. Phys. **132**, 234509 (2010).
8. A. B. de Oliveira, E. B. Neves, C. Gavazzoni, J. Z. Paukowski, P. A. Netz, and M. C. Barbosa. *Liquid crystal phase and waterlike anomalies in a core-softened shoulder-dumbbells system*, J. Chem. Phys. **132**, 164505 (2010).
7. A. B. de Oliveira, P. A. Netz, and M. C. Barbosa. *An ubiquitous mechanism for water-like anomalies*, Europhys. Lett. **85**, 36001 (2009).
6. A. B. de Oliveira, P. A. Netz, and M. C. Barbosa. *Which mechanism underlies the water-like anomalies in core-softened potentials?*, Euro. Phys. J. B **64**, 481 (2008).
5. A. B. de Oliveira, G. Franzese, P. A. Netz, and M. C. Barbosa. *Water-like hierarchy of anomalies in a continuous spherical shouldered potential*, J. Chem. Phys. **128**, 064901 (2008). [[+90 citations](#)]
4. A. B. de Oliveira, M. C. Barbosa, and P. A. Netz. *Interplay between structure and density anomaly for an isotropic, core-softened ramp-like potential*, Physica A **386**, 744 (2007).
3. A. B. de Oliveira, P. A. Netz, T. Colla, and M. C. Barbosa. *Structural anomalies for a three dimensional isotropic core-softened potential*, J. Chem. Phys. **125**, 124503 (2006). [[+70 citations](#)]
2. A. B. de Oliveira, P. A. Netz, T. Colla, and M. C. Barbosa. *Thermodynamic and dynamic anomalies for a three dimensional isotropic core-softened potential*, J. Chem. Phys. **124**, 84505 (2006). [[+90 citations](#)]
1. A. B. de Oliveira and M. C. Barbosa. *Density anomaly in a competing interactions lattice gas model*, J. Phys.: Cond. Matt. **17**, 399 (2005).

Financed Projects as Principal Investigator

1. *Mechanical properties of graphene: molecular dynamics simulations, atomic force microscopy, and Raman spectroscopy*, financed by CNPq, grant # 459852/2014-0. Budget: R\$ 44,000.00 for the period 2014-2017.
2. *Vibrational spectra of graphene wrinkles through molecular dynamics simulations*, financed by CNPq, grant # 303820/2013-6. Budget: R\$ 39,600.00 for the period 2013-2016.
3. *Effective models for molecular dynamics simulations of solute-solvent systems through nanotubes*, financed by CNPq, grant # 473703/2012-2. Budget: R\$ 26,500.00 for the period 2013-2016.
4. *Properties of water confined in carbon nanotubes: computational simulations*, financed by CNPq, grants # 303991/2010-0 and 475662/2010-5. Budget: R\$ 49,357.45 for the period 2010–2013.

Past Graduate Students

1. (Masters in Materials Science) Débora Nazaré Freitas. *Molecular dynamics simulations of confined water in carbon nanotubes under electric field*, Universidade Federal de Ouro Preto, Brazil, 2015-2017.

2. (Masters in Materials Science) Bruno Henrique da Silva. *Molecular dynamics simulations of confined water in deformed carbon nanotubes*, Universidade Federal de Ouro Preto, Brazil, 2015-2017.
3. (Doctorate in Materials Engineering) Cláudia Karina Barbosa de Vasconcelos. *Coarse-grained models for solute-solvent separation through nanostructures: theory and molecular dynamics simulations.*, Universidade Federal de Ouro Preto, Brazil, 2012-2016.
4. (Masters in Material Sciences) Frederico Mota Chaves. *Thermodynamics, dynamic, and structural properties of water and methanol: molecular dynamics simulations*, Universidade Federal de Ouro Preto, Brazil, 2013-2015.
5. (Masters in Material Sciences) Amauri Liberio de Lima. *Mechanical properties of graphene under stress: molecular dynamics simulations*, Universidade Federal de Ouro Preto, Brazil, 2012-2013.
6. (Masters in Material Sciences) Jessiara Garcia Pereira. *Vibrational spectra of carbon nanotubes through molecular dynamics simulations*, Universidade Federal de Ouro Preto, Brazil, 2012-2014.

Past Undergraduate Students

1. Tássylla Oliveira Fonseca. *Tribology of MoS₂ nanostructures by molecular dynamics simulations*, Universidade Federal de Ouro Preto, Brazil, 2012-2014.
2. Natália Rodrigues Pereira, *Effect of diameter in the electronic structure of boron nitride nanotubes covered with iron oxide*, Universidade Federal de Ouro Preto, Brazil, 2009–2011.
3. Vinícius Borges Pereira, *Hydrophobicity in graphenes: First principle simulations*, Universidade Federal de Ouro Preto, Brazil, 2009–2011.
4. Adalto Silveira Júnior. *Properties of water under confinement: Computational simulation*, Universidade Federal de Ouro Preto, Brazil, 2010–2011.
5. Paulo Azevedo Fernandes, *Study of the degradation of metallic nanocontacts by molecular dynamics simulations*, Universidade Federal de Ouro Preto, Brazil, 2009–2010.

International Conferences

1. A. B. de Oliveira et al. A simple computational model for solute-solvent separation through nanopores. **Poster presenter** in *Gordon Research Conferences on Water and Aqueous Solutions*, Plymouth, NH, U.S.A. (2014).
2. A. B. de Oliveira, G. Franzese, P. A. Netz, and M. C. Barbosa, A tunable two-scale potential: from double step to ramp potential. **Poster presenter** in *Gordon Research Conferences on Water and Aqueous Solutions*, Plymouth, NH, U.S.A. (2008).
3. A. B. de Oliveira, P. A. Netz, and M. C. Barbosa, Isotropic models and anomalous fluids. **Poster presenter** in *Spring College on Water in Physics, Chemistry and Biology* Trieste, Italy (2007).

4. A. B. de Oliveira, G. Franzese, P. A. Netz, T. Colla, and M. C. Barbosa, Water-like hierarchy of anomalies in a continuous spherical shouldered potential. **Poster presenter** in *STATPHYS23* Genova, Italy (2007).
5. A. B. de Oliveira, P. A. Netz, T. Colla, and M. C. Barbosa, Structural, Dynamic and Thermodynamic anomalies in a three dimensional isotropic core-softened potential. **Poster presenter** in *Gordon Research Conferences on Water and Aqueous Solutions*, Plymouth, NH, U.S.A. (2006).
6. A. B. de Oliveira and M. C. Barbosa. Density anomaly in a competing interactions lattice fluid. **Poster presenter** in *Workshop on Transport and Self-Organization in Complex Systems*, Porto Alegre, RS, Brazil (2004) .
7. A. B. de Oliveira and M. C. Barbosa. Phase-Diagram of a Competitive Interactions Lattice Fluid. **Poster presenter** in *VIII Latin American on Non-Linear Phenomena*, Salvador, BA, Brazil (2003).

National Conferences

1. A. B. de Oliveira, P. A. Netz, T. Colla, and M. C. Barbosa. Thermodynamic and dynamic anomalies in a three dimensional isotropic core-softened potential. **Speaker** in *Summer School on Soft Matter Physics*, São Paulo, SP, Brazil (2006).
2. A. B. de Oliveira, P. A. Netz, T. Colla, and M. C. Barbosa. Density anomaly and two liquid phases in core softened potentials. **Poster presenter** in *XXVIII Encontro Nacional de Física da Matéria Condensada*, Santos, SP, Brazil (2005).
3. A. B. de Oliveira, P. A. Netz, T. Colla, and M. C. Barbosa. Anomalias dinâmica e termodinâmica em um potencial de duas escalas. **Speaker** in *IV Mostra de Trabalhos de Pós-Graduação do IF-UFRGS*, Porto Alegre, RS, Brazil (2005).
4. A. B. de Oliveira and M. C. Barbosa. Diagrama de Fases de um Gás de Rede com Interações Competitivas. **Poster presenter** in *XXVII Encontro Nacional de Física da Matéria Condensada*, Poços de Caldas , MG, Brazil (2004).
5. A. B. de Oliveira and M. C. Barbosa. Simulação Monte Carlo em um gás de rede com interações competitivas. **Poster presenter** in *IX Escola Brasileira de Estrutura Eletrônica*, Salvador, BA, Brazil (2004).

Organization of Meeting

Member of organization of the *II Mostra de Trabalhos da Pós-Graduação do Instituto de Física da Universidade Federal do Rio Grande do Sul*. Porto Alegre, RS, Brazil (2003).