

CV - SUMMARY

Name: Douglas Soares Galvão

Birth date: 10/12/1961, married, two children, Brazilian citizenship.

Full Professor at Applied Physics Department – State University of Campinas

Brazilian (CNPq) Research 1A (highest level)

Elected Member of the Brazilian Academy of Science

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1) Education - Training

1979 - 1982 – Undergrad - Physics

Department of Physics – Federal University of Rio Grande do Norte, Natal (Brazil)

03/1983 - 07/1985 – Master in Physics

Institute of Physics – University of Campinas (Brazil)

08/1985 - 09/1989 – Doctor in Sciences

Institute of Physics – University of Campinas (Brazil)

10/1991 - 10/1993 – Postdoctoral Experience

Bell Communications Research, Red Bank, New Jersey, USA

Chemistry Department, Princeton University, Princeton, New Jersey, USA

2) Professional History

- 1989-1990 – Assistant Professor - UNESP, Bauru (Brazil)
- 1990-1996 – Assistant Professor - UNICAMP, Campinas (Brazil)
- 1996-2000 – Habilitation Professor - UNICAMP, Campinas
- 2000-2005 – Associate Professor - UNICAMP, Campinas
- 2005 – - Full Professor - UNICAMP, Campinas

3) List of 20 most relevant publications

3.1. Crystalline networks with unusual predicted mechanical and thermal properties

R.H. Baughman and D.S. Galvão

Nature **365**, 735 (1993)

3.2. Sign Change of Poisson's Ratio for Carbon Nanotube Sheets

L. J. Hall, V. R. Coluci, D. S. Galvão, M. E. Kozlov, M. Zhang, S. O. Dantas and R. H. Baughman

Science **320**, 504 (2008)

3.3. Electrically, Chemically, and Photonically Powered Torsional and Tensile Actuation of Hybrid Carbon Nanotube Yarn Muscles

M. D. Lima, Na Li, M. J. de Andrade, S. Fang, J. Oh, G. M. Spinks, M. E. Kozlov, C. S. Haines, D. Suh, J. Foroughi, S. J. Kim, Y. Chen, T. Ware, M. K. Shin, L. D. Machado, A. F. Fonseca, J. D. W. Madden, W. E. Voit, D. S. Galvão, R. H. Baughman
Science **338**, 928 (2012)

3.4. Hierarchically buckled sheath-core fibers for superelastic electronics, sensors, and muscles

ZF Liu, S Fang, FA Moura, JN Ding, N Jiang, J Di, M Zhang, X Lepró, DS Galvão, CS Haines, NY Yuan, SG Yin, DW Lee, R Wang, HY Wang, W Lv, C Dong, RC Zhang, MJ Chen, Q Yin, YT Chong, R Zhang, X Wang, MD Lima, R Ovalle-Robles, D Qian, H Lu, RH Baughman
Science **349**, 400 (2015)

3.5. Torsional refrigeration by twisted, coiled, and supercoiled fibers

R Wang, S Fang, Y Xiao, E Gao, N Jiang, Y Li, L Mou, Y Shen, W Zhao, S Li, AF Fonseca, DS Galvão, M Chen, W He, K Yu, H Lu, X Wang, D Qian, AE Aliev, N Li, CS Haines, Z Liu, J Mu, Z Wang, S Yin, MD Lima, B An, X Zhou, Z Liu, RH Baughman
Science **366**, 216-221 (2019)

3.6. Lock-and-key effect in the surface diffusion of large organic molecules probed by STM

R. Otero, R. Hummelink, F. Sato, S. B. Legoas, P. Thstrup, E. Lasgsgaard, I. Stensgaard, D. S. Galvão and F. Besenbacher
Nature Materials **3**, 779 (2004)

3.7. Experimental realization of suspended atomic chains composed of different atomics species

F. Bettini, F. Sato, P. Z. Coura, S. O. Dantas, D. S. Galvão and D. Ugarte
Nature Nanotechnology **1**, 183 (2006)

3.8. Observation of the smallest metal nanotube with a square cross-section

M. J. Lagos, F. Sato, J. Bettini, V. Rodrigues, D. S. Galvão and D. Ugarte
Nature Nanotechnology **4**, 149 (2009)

3.9. Surface functionalization of two-dimensional metal chalcogenides by Lewis acid–base chemistry

Sidong Lei, Xifan Wang, Bo Li, Jiahao Kang Yongmin He Antony George Liehui Ge Yongji Gong Pei Dong Zehua Jin, Gustavo Brunetto, Weibing Chen Zuan-Tao Lin Robert Baines, Douglas Galvão, Jun Lou, Enrique Barrera, Kaustav Banerjee, Robert Vajtai and Pulickel Ajayan
Nature Nanotechnology **11**, 465 (2016)

3.10. Exfoliation of a non-van der Waals material from iron ore hematite

Aravind Puthirath Balan, Sruthi Radhakrishnan, Cristiano F Woellner, Shyam K Sinha, Liangzi Deng, Carlos de los Reyes, Banki Manmadha Rao, Maggie Paulose, Ram Neupane, Amey Apte, Vidya Kochat, Robert Vajtai, Avetik R Harutyunyan, Ching-Wu Chu, Gelu Costin, Douglas S

Galvao, Angel A Martí, Peter A Aken, Oomman K Varghese, Chandra Sekhar Tiwary, Anantharaman Malie Madom Ramaswamy Iyer, Pulickel M Ajayan
Nature Nanotechnology **13**, 602 (2018)

3.11. Low-density three-dimensional foam using self-reinforced hybrid two-dimensional atomic layers

S. Vinod, C. S. Tiwary, P. A. S. Autreto, J. Taha-Tijerina, S. Ozden, A. C. Chipara, R. Vajtai, D. S. Galvao, T. N. Narayanan, P. M Ajayan
Nature Communications **5**, 4541 (2014)

3.12. Ambient solid-state mechano-chemical reactions between functionalized carbon nanotubes

MA Kabbani, CS Tiwary, PAS Autreto, G Brunetto, A Som, KR Krishnadas, S Ozden, KP Hackenberg, Y Gong, DS Galvao, R Vajtai, AT Kabanni, T Pradeep, PM Ajayan
Nature Communications **6**, 7291 (2015)

3.13. Dynamics of the formation of carbon nanotube serpentines (cover article)

L. D. Machado, S. B. Legoas, J. S. Soares, N. Shadmi, A. Jorio, E. Joselevich, and D. S. Galvão
Phys. Rev. Lett. **110**, 105502 (2013)

3.14. Molecular-Dynamics simulations of carbon nanotubes as gigahertz oscillators (cover article)

S. B. Legoas, V. R. Coluci, S. F. Braga, P. Z. Coura, S. O. Dantas, and D. S. Galvão
Phys. Rev. Lett. **90**, 055504 (2003)

3.15. Intrinsic stability of the smallest possible silver nanotube

P. A. S. Autreto, M. J. Lagos, F. Sato, J. Bettini, A. R. Rocha, V. Rodrigues, D. Ugarte, and D. S. Galvão
Phys. Rev. Lett. **106**, 065501 (2011)

3.16. Mechanical properties of nanosprings

A. F. da Fonseca and D.S. Galvão
Phys. Rev. Lett. **92**, 175502 (2004)

3.17. Emergence of prime numbers as the result of evolutionary strategy

P. R. A. Campos, V. M. de Oliveira, R. Giro and D. S. Galvão
Phys. Rev. Lett. **93**, 098107 (2004)

3.18. Band to correlated crossover in alternating hubbard and Pariser-Parr-Pople chains – nature of the lowest singlet excitation of conjugated polymers

Z. G. Zoltan, S. Ramasesha, and D. S. Galvao
Phys. Rev. Lett. **71**, 1609 (1993)

3.19. Theoretical approach to identify carcinogenic activity of polycyclic aromatic hydrocarbons

P. M. V. B. Barone, A. Camilo Jr., and D. S. Galvao

Phys. Rev. Lett. **77**, 1186 (1996)

3.20. Entanglement and the nonlinear elastic behavior of forests of coiled carbon nanotubes

VR Coluci, AF Fonseca, DS Galvao, C Daraio

Phys. Rev. Lett. **100**, 086807 (2008)

4. Funded Projects

Since I came to UNICAMP in 1990 our group have received and/or participated in projects funded in the order of millions of US dollars, mainly from the Federal Agencies CNPq and FINEP, and from the funding Agency from the State of São Paulo (FAPESP). The list below does not include student scholarships and personnel payments, which in Brazil are not part of research grants and are funded separately.

Representative funded projects:

- Theoretical Modeling of Conducting Polymers (FAPESP) – 2003-2005, US\$ 150,000.00
- Millennium Institute for Polymeric Materials (CNPq) – 2003-2005, US\$ 1,500,000.00
- Personal Grant (FAPESP) – Structural and Transport Properties of Metallic Nanowires – US\$ 70,000.00
- Grant for Computational Infrastructure (FAPESP) – 2006-2008, US\$ 350,000.00
- Theoretical Modeling of Nanostructures (FAPESP) – 2005-2009, US\$ 200,000.00
- Millennium Institute for Organic Electronic (CNPq) – 2018-2022, US\$ 2,500,000.00
- Physics of Petroleum (CNPq/FAPERJ) – 2008-2010 – US\$ 300,000.00
- Air Force Office of Scientific Research – AFOSR/USA, 2019-2022, US\$ 250,000.00 - Insulator-Metal Transition and Superconductivity in CuCl
- FAPESP/CEPID Computer Center Grant (2018-2025) ~US\$ 9.000.000.00.
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5) Academic quantitative indicators

5.1) Books: 01

5.2) Journal papers: 438

5.3) Book Chapters: 04

5.4) Supervised Master Projects: 14

5.5) Supervised PhD Projects: 21

5.6) Citations (Google Scholar): 15580 (H=64)

https://scholar.google.com.br/citations?view_op=list_works&hl=en&authuser=1&hl=en&user=95SvbM8AAAJ&pagesize=100&sortby=pubdate&authuser=1

6. Other information

- "Gold Medal – Federal University of Rio Grande do Norte" Best Undergraduate Student 1979-1982

- "Gleb Wataghin Prize- 1991- Brazilian Young Scientist Award – FAPESP

- "Zeferino Vaz Prize 2005 - Academic Excellence Award – State University of Campinas

- "Zeferino Vaz Prize 2019 - Academic Excellence Award – State University of Campinas

- Co-adviser of Francisco C. Lavarda - Prize for best Brazilian Ph. D. thesis in Physics – 1991, Brazilian Physical Society

- Adviser of Vitor R. Coluci - Prize - best Ph. D. Thesis in Physics – 2005, State University of Campinas
- Adviser of Fernando Sato - Prize - best Ph. D. Thesis in Physics – 2008, State University of Campinas
- Adviser of Tiago Botari - best Ph. D. Thesis in Physics – 2017, State University of Campinas
- Adviser of Fernando Sato - Honorific Mention for best Ph. D. Thesis in Physics – 2008, Brazilian Physical Society
- Elected member of the Brazilian Academy of Sciences (ABC)
- Member of the Brazilian Materials Research Society
- Member of the Brazilian Physical Society
- Reviewer of more than 25 journals, including Science, Nature, Nature Nanotechnology, Nature Chemistry, Nature Materials, Physical Review Letters, among others.
- Elected twice Head of the Applied Physics Department – UNICAMP
- Several times - Elected member of the Institute of Physics Council
- Elected Member elected of the University Council
- Director of the Institute of Physics Computer Center (2000-2003)
- Vice-Provost of Research 2014-2017
- Provost of the Strategic Planning of the State University of Campinas (since May, 2021)
- Associate Editor – Computational Materials Science (Elsevier)
- Associated Editor – Oxford Open Materials Science (Oxford University Press)
- Specialty Chief Editor of our Computational Materials Science section – Frontiers of Materials
- Associate Editor The Journal of Geophysics and Engineering (IOP)
- Apointed by the the Governor of the State of São Paulo (Brazil) member of the State Council of the Environmental Affairs.