



RODRIGO BARBOSA CAPAZ

Brazilian Nanotechnology National Laboratory
Brazilian Center for Research in Energy and Materials
&
Physics Institute, Federal University of Rio de Janeiro

Physicist and science leader with extensive experience in research, institutional management, scientific policy and international scientific cooperation. Director of the Brazilian Nanotechnology National Laboratory (LNNano/CNPEM), former President of the Brazilian Physical Society, Full Professor at UFRJ and member of the Brazilian Academy of Sciences. Extensive experience leading multidisciplinary research programs, national scientific initiatives and interactions among academia, government and industry.

EDUCATION

PONTIFÍCIA UNIVERSIDADE CATÓLICA DO RIO DE JANEIRO

B.S. in Physics, December 1989

PONTIFÍCIA UNIVERSIDADE CATÓLICA DO RIO DE JANEIRO

M.S. in Physics, June 1991

Thesis: Pressure and Composition Effects in the Gap Properties of $Al_xGa_{1-x}As$

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

Ph.D. in Physics, June 1996

Thesis: Ab Initio Studies of Semiconductors: Defects, Surfaces and Interfaces

PROFESSIONAL EXPERIENCE

- 2021-2026 **Brazilian Nanotechnology National Laboratory (LNNano),
Brazilian Center for Research in Energy and Materials (CNPEM)**
Director
 - Provide strategic and scientific leadership for LNNano, defining institutional priorities and overseeing the implementation of research, technology and innovation programs.
 - Lead multidisciplinary teams of physicists, chemists, biologists, materials scientists, engineers, technical staff and administrative professionals, fostering scientific excellence and a collaborative institutional environment. Team size: 240+ employees, research fellows, and interns
 - Oversee the planning and operation of advanced, multi-user research infrastructure, including major investments in scientific facilities and equipment.

- Manage institutional resources and budgets, suggesting priorities for investments, personnel, infrastructure and research programs in alignment with CNPEM's strategic goals. Annual budget in 2025: R\$ 84M = US\$ 16M
- Represent LNNano in interactions with government agencies, universities, research institutions, funding organizations and industry, developing strategic partnerships and new scientific and technological initiatives.
- 1997-2026 **Instituto de Física, Universidade Federal do Rio de Janeiro**
Full Professor
 - Research activities in theoretical physics of condensed matter and nanostructured systems
 - Undergraduate and graduate teaching and mentoring
 - Visiting scholar at U. C. Berkeley (Physics Department) – 2003-2005 and 2009-2011

ACADEMIC LEADERSHIP AND SERVICE (SELECTED)

- President of the Brazilian Physical Society (2023-2025)
- International Councilor, American Physical Society (APS) (2025–present)
- Member, Physics and Astronomy Advisory Committee, CNPq (2014–2017)
- Member, Commission C8 (Semiconductors), International Union of Pure and Applied Physics (IUPAP) (2017–2021)
- Coordinator, National Institute of Science and Technology (INCT) for Quantum Devices (2025–present)
- Program Chair, Autumn Meeting of the Brazilian Physical Society, Rio de Janeiro – RJ, 2027
- Conference Chair, Brazilian Meeting on Condensed Matter Physics, Águas de Lindoia – SP, 2009
- Program Chair, Brazilian Meeting on Condensed Matter Physics, Foz do Iguaçu – PR, 2015

HONORS AND AWARDS

- John Simon Guggenheim Memorial Foundation Fellowship – 2003
- “Young Scientist” Prize - Physics, TWAS-ROLAC, 2009
- Research Fellow 1A (highest rank) of CNPq
- Member of the Brazilian Academy of Sciences (since 2023)

BIBLIOMETRICS (Google Scholar, 08/28/2026)

- 174 articles
- 16,412 citations
- h-index = 50

SELECTED PUBLICATIONS

- *Quantifying defects in graphene via Raman spectroscopy at different excitation energies*, L. G. Cançado, A. Jorio, E. H. Martins Ferreira, F. Stavale, C. A. Achete, R. B. Capaz, M. V. O. Moutinho, A. Lombardo, T. S. Kulmala, and A. C. Ferrari, Nano Lett. 11, 3190 (2011) – 4,387 citations
- *Spatially resolving edge states of chiral graphene nanoribbons*, C. Tao, L. Jiao, O. V. Yazyev, Y.-C. Chen, J. Feng, X. Zhang, R. B. Capaz, J. M. Tour, A. Zettl, S. G. Louie, H. Dai and M. F. Crommie, Nature Phys. 7, 616 (2011) – 844 citations
- *Theory and ab initio calculation of radiative lifetime of excitons in semiconducting carbon nanotubes*, C. D. Spataru, S. Ismail-Beigi, R. B. Capaz, and S. G. Louie, Phys. Rev. Lett. **95**, 247402 (2005) – 483 citations
- *An atlas of carbon nanotube optical transitions*, K. Liu, J. Deslippe, F. Xiao, R. B. Capaz, X. Hong, S. Aloni, A. Zettl, W. Wang, X. Bai, S. G. Louie, E. Wang, and F. Wang, Nature Nanotech. 7, 325 (2012) – 276 citations
- *Temperature dependence of the band gap of semiconducting carbon nanotubes*, R. B. Capaz, C. D. Spataru, P. Tangney, M. L. Cohen, and S. G. Louie, Phys. Rev. Lett. 94, 036801 (2005) – 185 citations
- *Theory of hole-spin qubits in strained germanium quantum dots*, L. A. Terrazos, E. Marcellina, Zhanning Wang, S. N. Coppersmith, Mark Friesen, A. R. Hamilton, Xuedong Hu, Belita Koiller, A. L. Saraiva, Dimitrie Culcer, and Rodrigo B. Capaz, Phys. Rev. B 103, 125201 (2021) – 143 citations
- *Systematic determination of absolute cross-section of individual carbon nanotubes*, K. Liu, X. Hong, S. Choi, C. Jin, R. B. Capaz, J. Kim, W. Wang, X. Bai, S. G. Louie, E. Wang and F. Wang, PNAS 111, 7564-7569 (2014) – 94 citations
- *Direct-to-indirect crossover in semiconductor alloys: A first-order phase transition?*, B. Koiller e R. B. Capaz, Phys. Rev. Lett. **74**, 769 (1995) – 29 citations
- *Signatures of bulk and surface arsenic antisite defects in GaAs(110)*, R. B. Capaz, K. Cho e J. D. Joannopoulos, Phys. Rev. Lett. **75**, 1811 (1995) – 60 citations