Fabio Rasera Figueiredo

Research Interests	Computer simulations in statistical physics, condensed matter and materials science; rare event Molecular Dynamics; characterization and modelling of nanostructures; Polymer physics; Susteinable science; machine learning.		
Education	Ph.D. in Theoretical and Applied Mechanics Sapienza Università di Roma Advisor: Prof. Dr. Alberto Giacomello	2021 – 11/2024 Italy	
	M.Sc. in Physics Universidade Federal do Rio Grande do Sul (UFRGS) Thesis: A new proposal for avoiding sintering of nanoparticl Advisor: Prof. Dr. Fabiano Bernardi Co-advisor: Prof. Dr. Carolina Brito	in Physics 2019 – 2022 ersidade Federal do Rio Grande do Sul (UFRGS) S: A new proposal for avoiding sintering of nanoparticles in catalysis or: Prof. Dr. Fabiano Bernardi lvisor: Prof. Dr. Carolina Brito	
	B.Sc. in Astrophysics Universidade Federal do Rio Grande do Sul (UFRGS) Thesis: Sintering prevention of Cu/MgO Advisor: Prof. Dr. Fabiano Bernardi	2014 – 2019 Brazil	
Grants and scholarships	Starting research project , Università Sapienza di Roma Ph.D. research fellowship , Università Sapienza di Roma M.Sc research fellowship , CNPq Undergraduate extension fellowship , UFRGS Undergraduate teaching assistant fellowship , UFRGS	2023 - 2024 2021 - 2024 2019 - 2021 2017 - 2018 2015 - 2016	
Publications	Rasera, F. , Gresham, I. J., Tinti, A., Neto, C., Giacomello, A. (2024). Molecu- lar origin of slippery behaviour in tethered liquid layers . <i>arXiv preprint</i> arXiv:2410.00815.		
	Iannetti, L., Cambiaso, S., Rasera, F. , Giacomello, A., Rossi, G., Bochicchio, D., Tinti, A. (2024). The surface tension of Martini 3 water mixtures . <i>The Journal of Chemical Physics</i> , 161(8), 084707		
	Rasera, F. , Cambiaso, S., Tinti, A., Bochicchio, D., Grosu, Y., Rossi, G., Gia- comello, A. (2024). Local grafting heterogeneities control water intrusion and extrusion in nanopores. <i>Communications Materials</i> , 5(1), 100.		
	Rasera, F. , Steffli, A., Matte, L., Della Mea, G., Balzaretti, N., Poletto, F., Brito, C., Bernardi, F. (2023). Slowing Sintering to Increase the Lifetime of Cu Nanoparticles on Metal Oxide Supports. <i>ACS Applied Nano Materials</i> , 6(7), 6435-6443.		
	Cambiaso, S., Rasera, F. , Rossi, G., Bochicchio, D. (2022). De transferable coarse-grained model of polydimethylsilos 18(40), 7887-7896.	evelopment of a kane. Soft Matter,	

Patents	Rasera, F., Bernardi, F., Poletto, F., Della Mea, G. Production process of sintering-resistant catalyst, catalyst obtained and its uses (2021). Deposited patent request, under process number BR 10 2022 007407 0.	
TEACHING EXPERIENCE	Teaching assistant, Department of Physics (UFRGS)2017 – 2018Ministered classes and conducted demonstrative laboratory experiments on mechanics, thermodynamics, optics and electromagnetism for more than 40 students in the Open Laboratories project. Coordinator: Prof. Dr. Fabiano Bernardi.	
	Teaching assistant, Department of Astronomy (UFRGS)2015 - 2016Ministered classes on positional astronomy and coordinated night sky observations for more than 60 students of the undergraduate course "Exploring the universe: from quarks to quasars".Coordinator: Prof. Dr. Basílio Santiago.	
Conferences and workshops	Australasian Colloid and Interface SymposiumFeb 2024Grafting heterogeneities rule water intrusion-extrusion in nanopores.20 min oral presentation. Terrigal, NSW, Australia.	
	Frontiers in ion channels and nanopores: where technologySep 2023and biology meetIntrusion-extrusion in modelled grafted nanopores.5 min oral presentation and poster. Rome, Italy.	
	Fluids in porous materials: From fundamental physics to engineering applicationsJune 2023Grafting heterogeneities rule intrusion-extrusion in nanopores. Poster. Lausanne, Switzerland.Final Action Statement	
	Metastability and multiscale effects in interfacialMar 2023phenomenaIntrusion-extrusion of water in silane-grafted nanopores.Poster. Lausanne, Switzerland.	
	XXV AIMETA CongressSep 2022Intrusion-extrusion of liquids in realistic mesoporous materials with differentpore connectivities.Palermo, Italy. 10 min oral presentation.	
	From biology to bioinspiration: theory, simulation and experiments for biophysical systemsJun 2022Corse-grained modelling of silanized silica surfaces.Poreta, Italy. 5 min oral presentation.	
	University extension exhibition XIXOct 2018Open Laboratories Project.Porto Alegre, Brasil. 15 min oral presentation.	

	University extension exhibition XVIII Open Laboratories Project. Porto Alegre, Brasil. 15 min oral presentation.	Oct 2017
Skills	Programming Python, C, C#, C++, R, Awk, Bash.	
	Computational analysis techniques All-atom and coarse-grained Molecular Dynamics simulations, simulations, Free Energy methods, Machine Learning technique	Monte Carlo s.
	Computational tools GROMACS, LAMMPS, Plumed, MDAnalysis, LaTeX, Overleaf, book, Visual Studio Code, Demeter, FullProf, Pandas, Scikit-learn Slurm, GitHub, VMD.	Jupyter note- 1, TensorFlow,
	Experimental analysis techniques X-ray Diffraction (XRD), Transmission Electron Microscopy (TH X-ray Absorption Fine Structure (EXAFS), X-ray Absorptio Structure (XANES), X-ray Photoelectron Spectroscopy (XPS), St Ray Scattering (SAXS), Mass Spectrometry (MS).	EM), Extended n Near Edge mall Angle X-
	Languages Portuguese: native; English: fluent; Italian: advanced; Spanish: i	ntermediate.
Service and outreach	Open Laboratories Project 2017 – 2018 Preparatory course for university admission exams aimed at underprivileged and minority students wherein I Ministered theoretical classes, assembled and conducted experiments on fundamental physics and personally guided students.	
Complementary formation	Visiting invited researcher The University of Sydney. Sydney, Australia.	Feb-Mar 2024
	Bioinformatics and Deep Learning for biodata analysis Università di Bologna. Bologna. Italy.	2022
	Understanding Molecular Simulations University of Amsterdam. Amsterdam, Netherlands.	2021
	Synthesis and characterization of nanostructures Universidade Federal do Rio Grande do Sul. Porto Alegre, Brazil	