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EDUCATION

University of California, San Francisco (2015) — San Francisco, CA
Postdoc, Dept. of Cellular and Molecular Pharmacology — Mentor: Shawn M. Douglas

University of Michigan (2009 – 2015) — Ann Arbor, MI
Ph.D., Applied Physics — Advisor: Sharon C. Glotzer

University of Sao Carlos (2005 – 2009) — Sao Paulo, Brazil
B.S., Physics — Advisor: Jose P. Rino

VISITING POSITIONS AND OTHER AFFILIATIONS

Visiting Scholar (Daan Frenkel's group). Cambridge University, UK. (Nov. 2014)
Visiting Scholar (Frank Scheffold's group). University of Fribourg, CH. (July 2014)
University of Michigan's Center for the Study of Complex Systems (2012 – 2015)

AWARDS, HONORS AND DISTINCTIONS

Grants and Fellowships Awarded

DOE: DNA Blocks Designed to Self-Assemble into Desired Nanostructures (DE-SC0008772) (2016-2019)
$1,400,414 (PI: Sanat Kumar; Douglas share: $372,600)
I initiated the collaboration, developed two of the aims, and helped writing the grant.

NSF: Simulation Studies of Colloidal Crystallization and Self Assembly (DMR 140129) (2015-2016)
10,300,000 CPU-hours of computation (PI: Sharon Glotzer)
I developed three aims in this proposal, based on preliminary data from my research.

U Michigan Pre-doctoral Graduate (Fellowship) (2015-2016)
$32,640 (PI: Pablo Damasceno)
Merit-based fellowship for doctorate excellence. I wrote the application.

DOE: EFRC for Bio-inspired Energy Science (DE-SC0000989) (2014-2018)
$16,000,000 (PI: Samuel Stupp; Glotzer share: $975,000)
I developed and wrote one of our two aims based on my preliminary data.

NSF: Multi-scale Origami for Novel Photonics and Energy Conversion (EFRI-1240264) (2012-2016)
$1,986,615 (PIs: Max Shtein; Glotzer share: $451,325)
I developed the main direction for the computational aspect of this proposal. It funded the doctorate of two of students who worked under my mentorship.

NSF: CEMRI for Photonics and Multiscale Nanomaterials (DMR 1120923) (2011-2017)
$13,320,000 (PI: Ted Norris; Glotzer share: 0.5 student/year)
I designed one of the aims. This grant partially funded my Ph.D. research.

Workshop Proposals Funded

American Institute of Mathematics Structured Quartet Research Ensembles — San Jose, CA (2017-19)
Kinetic Networks: from Topology to Design. Funded by Santa Fe Institute — Santa Fe, NM (2015)
Michigan Complexity Mini-Conference. Funded by University of Michigan — Ann Arbor, MI (2012-13)

Other Awards (Presentations, Publications and Conferences)

Cover Article (Soft Matter) — Royal Society of Chemistry (2016)
Distinguished Dissertation Award, Honorable Mention — University of Michigan (2015)
Featured Student (Center for the Study of Complex Systems) — University of Michigan (2015)
Nature Materials Cover Article, 15 — Nature Publishing Group (2015)
Nature Materials News & Views Selection, 14 — Nature Publishing Group (2014)
Lindau Nobel Laureate Meeting (Merit-Based Selection) — Lindau, DE (2014)
Best Poster Nomination. MRS Spring Meeting — San Francisco, CA (2014)
Article Selected for Synopsis (Phys. Rev. X) — American Physical Society (2014)
Article Selected as *Hot Paper* (Angew. Chemie) — Wiley Online Library (2013)
Poster Award (3rd place). 12th Mini Stat Mech Meeting — Berkeley, CA. (2013)
Science Magazine Featured Paper + Interview — AAAS (2012)
Talk of the Year: Applied Math Students Seminar — University of Michigan (2012)
Poster Award (1st place): International School "Enrico Fermi" — Varenna, Italy. (2012)
Featured Illustration: (Phys. Rev. B) — American Physical Society (2009)

PEER-REVIEWED PUBLICATIONS — Google Scholar Citations: 1009

18. Dodd, P; **Damasceno, PF**; Glotzer, SC — PNAS (2018)

Universal Folding Pathways of Polyhedron Nets

17. Zhou, YL; **Damasceno, PF**; … Kotov, NA — **Nature Comm. (2018)**

Unusual Multiscale Mechanics of Biomimetic Nanoparticle Hydrogels

16. Taylor, JE; Teich, EG; **Damasceno, PF**; Kallus Y; Senechal M — Symmetry (2017)

On the Form and Growth of Complex Crystals: the case of Tsai-type clusters

15. **Damasceno, PF;** Engel, M; Glotzer, SC; — J Phys Cond Matter (2017)

Non-close-packed Three-dimensional Quasicrystals

14. Cadotte, AT; Dshemuchadse, J; **Damasceno, PF;** Newman, RS Glotzer, SC — Soft Matter (2016)

Self-assembly of a space-tessellating structure …

13. Froufe-Pérez, LS; Engel, M; **Damasceno, PF;** Muller, N; — Phys Rev Lett (2016)

Haberko, J; Glotzer, SC; Scheffold, F.

Role of Short-Range Order in the Formation of Band Gaps in Disordered Photonic Materials

12. **Damasceno, PF;** Karas, AS; Schultz, BA; Engel, M; Glotzer, SC — Phys Rev Lett (2015)

Controlling Chirality of Entropic Crystals

11. Shyu, TC; **Damasceno, PF;** Dodd, PM; Lamoureux, A; Xu, L.; — **Nature Materials (2015)**

Shlian, M.; Shtein, M; Glotzer, SC; Kotov, NA

A Kirigami Approach to Engineering Elasticity in Nanocomposites

10. Schultz, BA; **Damasceno, PF;** Engel, M; Glotzer, SC — ACS Nano (2015)

Symmetry Considerations for the Targeted Assembly of …

9. Engel, M; **Damasceno, PF**; Phillips, CL; Glotzer, SC — **Nature Materials (2014)**

Computational Discovery of a one-component Icosahedral Quasicrystal

8. Chen, ER; Klotsa, D; Engel, M; **Damasceno, PF**; Glotzer, SC — Phys Rev X (2014)

Complexity in surfaces of densest packings for families of polyhedra

7. Young, KL; Personick, ML; Engel, M; **Damasceno, PF;** Barnaby, SN.; Bleher, R; Li, T; Glotzer, SC; Lee, B; Mirkin, CA — Angew Chem (2013)

A Directional Entropic Force Approach to Anisotropic Nanoparticle Assembly

6. **Damasceno, PF;** Engel, M; Glotzer, SC — **Science (2012)**

Predictive Self-Assembly of Polyhedra into Complex Structures

5. **Damasceno, PF;** Engel, M; Glotzer, SC — ACS Nano (2012)

Crystalline Assemblies of a family … and the Role of Directional Entropic Forces

4. **Damasceno, PF;** daSilva, CJ; Rino, JP; Cândido, L. — J Low Temp Phys (2010)

Temperature and Pinning Effects on Driving a 2D Electron System on a Helium Film

3. DaSilva, CJ; Rino, JP; **Damasceno, PF;** Sherman, EYa; — Phys Review B (2010)

Two-dimensional Coulomb solid with interaction anisotropy

2. **Damasceno, PF;** Gonçalves, LGV; Rino, JP; de Oliveira, RCM — Phys Review B (2009)

Pressure-induced Structural Phase Transitions in a Two-Dimensional System

1. **Damasceno, PF;** Rino, JP — Rev Brasil Ens Fis (2006)

Analysis of a Slingshot and Helical Plastic Springs: a Case Study

JOURNALS REFEREED (28 manuscripts)

Physical Review Materials (ISSN 2475-9953)	(2017 – present)
Physical Review E (ISSN 2470-0053)	(2017 – present)
Physical Review Letters (ISSN 0031-9007)	(2016 – present)
PNAS (ISSN 1091-6490)	(2016 – present)
Scientific Reports (ISSN 2045-2322)	(2015 – present)
ACS Nano (ISSN 1936-0851)	(2015 – present)
Granular Matter (ISSN: 1434-5021)	(2012 – present)

PROFESSIONAL EXPERIENCE AND OUTREACH

Workshops, Conferences, Symposia Organized

Co-organizer, Brazilian Materials Research Meeting Session — Rio de Janeiro, BR (2015)
Organizer, American Physical Society Meeting Session — San Antonio, TX (2015)
Co-organizer, Santa Fe Institute Workshop — Santa Fe, NM (2015)
Co-organizer, II Michigan Complexity Mini-Conference — Ann Arbor, MI. (2013, 2014)
Co-organizer, Complex Systems Adv. Academic Workshop — Ann Arbor, MI (2013)
Co-founder, Complex Systems Multidisciplinary Workshop — Ann Arbor, MI. (2012)
Co-founder, "Physics Week" Undergraduate Symposium — Sao Paulo. BR. (2006, 07, 08, 09)

Teaching Experience

Macromolecules (Graduate Level, TA) — UCSF (2016)
Assembly Engineering (Graduate Level, TA) — University of Michigan (2013)
Physics Principles for Biologists (Undergrad. Level, TA) — University of Sao Carlos (2009)

Students Co-Mentored:

Graduate Students: PM Dodd; Y Geng; A Karas; A Cadotte; CS Adorf: Michigan
Undergraduate Students: J Berleant; S Zatzke; E Siismets: Michigan

Others:

Volunteer Reviewer for University Of Michigan Club Of Silicon Valley Scholarship (Palo Alto, 2017)

TALKS

Invited (16):

1. "Packing, Jamming, Assembly and Folding: (Some) Mathematics Behind Materials Design" *Mathematical Congress of the Americas*. Montréal. CA (*July 2017*)
2. "What do the bees know?" *PUBTechSF*. San Francisco. USA (2017)
3. "More disordered than disorder" *SFSU Physics Depart Colloquium*. San Francisco. USA (2016)
4. "What else don't the bees know?" *American Institute of Math Workshop*. San Jose. USA (2016)
5. "Self-Assembly of Complex Crystals Through Building Block Design". *Molecular Programming Project Colloquium*. Caltech. USA (2016)
6. "Computer Simulation Insights into the Physics of Life". *Brazilian Materials Research Society Meeting*. Rio de Janeiro. Brazil (2015)
7. "Towards a Thermodynamic Emergence of Artificial Life". *Omidyar Fellowship Colloquium*. Santa Fe Institute. New Mexico. USA (2015)
8. "Self-Assembly across length scales". *Physics Depart Colloquium*. University of Sheffield. UK. (2014)
9. "What the Bees Know and What They Don't Know. Meanders on Shape, Packing and Self-Assembly in Nature". *Cambridge's Biological and Statistical Physics Discussion Group*. Cambridge. UK. (2014)
10. "Predictive self-assembly of polyhedra into complex structures". *Colloquium*. University of Twente. Enschede. Netherlands. (2012)
11. "What do the bees know and what they do not know". *Complex Systems Advanced Academic Workshop* (CSAAW). Ann Arbor. USA. (2012)

12. "Auto-organização: Usando as leis do universo em favor da nanociência (e além)". *Brazilian Research Network in Nanotechnology, Society and Environment*. São Paulo. Brazil (2012)
13. "A Física da Automontagem. *VII Semana da Física da UFSCar*". Sao Carlos. Brazil. (2011)
14. "Ciências, cientistas e outras profissões". *Instituto Dom Barreto High School*. Teresina. Brazil. (2011)
15. "Minha Trajetória como um Físico" (My Path as a Physicist). *IDB High School*. Teresina. Brazil. (2011)
16. "Scaling Up your Research with Computer Simulations" *Physics Students Symposium*. Ann Arbor. USA. (2011)

Contributed (21):

17. "Using Machine Learning for Soft-Matter Crystal Discovery and Design". MRS Meeting. Boston (2015)
18. "A Directional Entropic Force Approach for Self-Assembly of 3-Dimensional Enantioselective Crystals". AIChe Meeting. Salt Lake City (2015)
19. "Anomalies of Mechanical Properties in Nanoparticle Hydrogels". AIChe Meeting. Salt Lake City (2015)
20. "A Kirigami Approach to Engineering Elasticity in Nanocomposites". *Brazilian Materials Research Society Meeting*. Rio de Janeiro. Brazil (2015)
21. "In search of Global Icosahedral Order". *Unifying Concepts in Glass Physics*. Aspen. (2015)
22. "Entropic Utopia: Shaping disorder for targeted self-assembly across length scales". Colloquium. *Theoretical Chemistry Seminar*. Cambridge. UK. (2014)
23. "Packing, Folding, Assembling, and Jamming". *Stat. Mech. Colloquium*. Berkeley. USA. (2014)
24. "More disordered than disorder: self-organization, microstates and why entropy might not be what you think". *Santa Fe Institute (SFI) Seminar*. Santa Fe. USA. (2014)
25. "What the Bees Know and What They Don't Know. Meanders on Shape, Packing and Self-Assembly". *Ecole Thématique du CNRS: Waves and Disorder*. Cargèse. FR. (2014)
26. "Lego: a Toy Model for Self-Assembly". *3rd Michigan Complexity Mini-Conference*. Ann Arbor. USA. (2014)
27. "Folding by Design". *MRS Spring Meeting*. San Francisco. USA. (2014)
28. "Cutting and Folding for Tunable Materials Properties". *APS March Meeting*. Denver. USA. (2014)
29. "Bio-Inspired Materials with Tunable Mechanical Properties". *AIChe*. San Francisco. USA. (2013)
30. "The Role of Anisotropy for the Assembly of Hard Colloidal Particles". *AIChe*. San Francisco. USA. (2013)
31. "Self-Assembly of Complex Crystals Through Building Block Design". *International Soft Matter Conference*. Rome. Italy. (2013)
32. "Crystallographic Tailoring: Self-Assembling Complex Crystals Through Building Block Design". *APS March Meeting*. Baltimore. USA. (2013)
33. "Packing versus Assembly in Systems of Hard Polyhedra". *MRS Fall Meeting*. Boston. USA. (2012)
34. "Packing, Jamming, Assembly and Folding: (some) Mathematics Behind Materials Design". *Applied Interdisciplinary Math Department*. Ann Arbor. USA (2012) – *Awarded
35. "Self-Assembly of non-Spherical Colloids". 2nd International *Workshop on Complex Physical Phenomena in Materials*. Porto de Galinhas. Brazil. (2012)
36. "Crystalline Assembly of Hard Polyhedra via Directional Entropic Forces". *APS March Meeting*. Boston. USA. (2012)
37. "Modelagem por Dinâmica Molecular de Transições de Fase Estruturais em Sistemas Bidimensionais". Brazilian Young Researchers Symposium. São Carlos. Brazil. (2008)

CONFERENCES, SYMPOSIA, WORKSHOPS AND SCHOOLS ATTENDED

International:

1. American Institute of Mathematics (AIM) Workshop. San Jose. (2016)
2. Brazilian Materials Research Society Meeting (SBPMat). Rio de Janeiro. (2015)
3. International Conference on Intelligent Robots and Systems. Chicago. (2014)
4. Lindau Nobel Laureate Meeting. Germany. (2014)
5. Waves and Disorder Summer School. France. (2014)
6. International Soft Matter Conference. Italy. (2013)
7. Geometry and Physics of Spatial Random Systems. Germany. (2013)
8. International Workshop on Complex Physical Phenomena. Brazil. (2012)
9. International School of Physics "Enrico Fermi". Italy. (2012)
10. Workshop on Sphere Packing and Amorphous Materials. ICTP. Italy. (2011)
11. Black Forest Focus on Self-Assembly on all Scales. Germany. (2011)
12. Summer school in High Performance Computing. Italy. (2010)
13. Conference on Computational Physics. Brazil. (2008)
14. XV Symposium for Young Researchers. Paraguay. (2007)

National:

15. MRS Fall Meeting. Boston MA. (2012; 2015)
16. MRS Spring Meeting. San Francisco CA. (2014; 2015)
17. APS March Meeting. (2012; 2013; 2014; 2015)
18. AIChe Annual Meeting. USA. (2011; 2013; 2015)
19. Santa Fe Institute Workshop: "Kinetic Networks: From Topology to Design". Santa Fe NM. (2015)
20. DNA21. Harvard MA. (2015)
21. Transformational Technologies in Molecular Simulations. Madison. MI. (2014)
22. 3rd Michigan Complexity Mini-Conference. Ann Arbor MI. (2014)
23. Michigan – Purdue Photonics Workshop. Lafayette IN. (2014)
24. CyberInfrastructure Days. Ann Arbor MI. (2013)
25. The Evolution of Cooperation & The Framing of Peace. Ann Arbor MI. (2013)
26. Modeling the Dynamics of Norms and Culture. Ann Arbor MI. (2013)
27. 2nd Michigan Complexity Mini-Conference. Ann Arbor MI. (2013)
28. Advances in Percolation and Related Topics. Ann Arbor MI. (2012)
29. 12th Experimental Chaos and Complexity Conf. Ann Arbor MI. (2012)
30. CyberInfrastructure Days. Ann Arbor MI. (2012)
31. Petascale Programming, Environments and Tools. Urbana IL. (2010)
32. Proven Algorithmic Techniques for Many-core Proc. Ann Arbor MI. (2010)
33. AFOSR metamaterial review. Virginia Beach VA. (2010)
34. XVI Congress for Young Researchers. Brazil. (2008)
35. XXXI National Meeting on Condensed Matter Physics. Brazil. (2008)
36. XI Brazilian School of Electronic Structure. Brazil. (2008)
37. I Winter School (IFGW - Unicamp). Brazil. (2008)
38. Physics week. Brazil. (2005; 2006; 2007)
39. XXII Theoretical Physics Journey. Brazil. (2007)
40. XVII Scientific Journey Brazil. (2007)
41. I Escola de Física Computacional Moderna. Brazil. (2006)
42. XIV Congress for Young Researchers. Brazil. (2006)

PROFESSIONAL REFERENCES

Sharon C. Glotzer (NAS, AAAS)
Anthony C. Lembke Dept. Chair of Chem. Eng.
John Werner Cahn Distinguished Professor of Eng.
Stuart W. Churchill Collegiate Prof. of Chemical Eng.
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