Center for Soft Matter and Biological Physics
Department of Physics, Virginia Tech
Annual Report – Fiscal Year 2022

The Center for Soft Matter and Biological Physics was chartered on February 12, 2016.
This annual report covers the period July 1, 2021, through June 30, 2022.

I. Mission Statement of the Center for Soft Matter and Biological Physics

The mission of the Center for Soft Matter and Biological Physics is to advance the rapidly growing research areas of soft matter and biological physics, in alignment with the long-range plans of the Department of Physics, the College of Science, and Virginia Tech. Special attention will be extended to how these developments can address many of the most significant problems currently facing society, including effective drug design and delivery, next generation materials, programmable biology, and models for human disease.

Center members will enjoy the benefits of a formal unifying organizational structure that will focus their research projects, and both nucleate new and strengthen already existing cooperative interdisciplinary efforts in soft matter and biological physics across campus. The Center structure will enhance its members' opportunities to attract external research funding, and to propose large collaborative center grants. In addition, the Center will increase its members' visibility both within Virginia Tech and externally and facilitate the establishment of a vibrant Center scientific seminar series.

The objectives of the Center for Soft Matter and Biological Physics are to

- serve as a formal unifying and trans-disciplinary organizational structure that supports the science program in soft matter and biological physics at Virginia Tech.
- increase the number of joint external grants from member investigators of the Center.
- develop collaborative Center proposals that focus on research and education in the areas of soft matter and biological physics and seek expanded external funding from government and foundational sources.
- establish a vibrant scientific seminar series on soft matter and biological physics and support the weekly Physics Department Condensed Matter Seminar with (mostly) external speakers.
- establish an annual symposium and/or summer school within the Center to promote both research and education in the areas of soft matter and biological physics.
- participate in the organization of local, national, and international conferences and workshops that include the Virginia Soft Matter Workshop series (an annual workshop that rotates among major Virginia institutions); and to attract national and international conferences to Virginia Tech.
- develop an educational module in collaboration with other Virginia Tech Institutes such as the Macromolecules and Interfaces Institute (MII) to provide instruction and training to Virginia Tech students who are interested in or need an exposure to soft matter and biological physics.

II. Classification of Center and Organizational Structure

1. Organization

The Center for Soft Matter and Biological Physics is a department center administered by the Department of Physics in the College of Science.

Department Chair and Center Administrator:

- Dr. Mark Pitt, Professor, Department of Physics, College of Science

Center Director and Contact Person:

- Dr. Uwe C. Täuber, Professor, Department of Physics, College of Science, Faculty of Health Sciences

Center Steering Committee:

- Dr. Justin Barone, Professor, Department of Biological Systems Engineering, College of Agriculture and Life Science and College of Engineering
- Dr. Jonathan Boreyko, Associate Professor, Department of Mechanical Engineering, College of Engineering
- Dr. Daniel Capelluto, Associate Professor, Department of Biological Sciences, College of Science
- Dr. Shengfeng Cheng, Associate Professor, Department of Physics, College of Science

Center Website: https://csmb.phys.vt.edu

The Center faculty held regularly scheduled elections via an online polling platform in August 2022. Starting September 1, the new Center Director will be:

- Dr. Shengfeng Cheng, Associate Professor, Department of Physics, College of Science

The Center steering Committee for the next two-year term of office consists of:

- Dr. Justin Barone, Professor, Department of Biological Systems Engineering, College of Agriculture and Life Science and College of Engineering
- Dr. Jonathan Boreyko, Associate Professor, Department of Mechanical Engineering, College of Engineering
- Dr. Daniel Capelluto, Associate Professor, Department of Biological Sciences, College of Science
- Dr. Uwe C. Täuber, Professor, Department of Physics, College of Science, Faculty of Health Sciences

2. **List of Faculty Affiliated with the Center**

Regular faculty members (37) as of September 1, 2022:

- Dr. Rana Ashkar, Assistant Professor, Department of Physics, College of Science
- Dr. Justin Barone, Professor, Department of Biological Systems Engineering, College of Engineering
- Dr. Michael Bartlett, Assistant Professor, Department of Mechanical Engineering, College of Engineering
- Dr. Bahareh Behkam, Associate Professor, Associate Professor, Department of Mechanical Engineering, College of Engineering
- Dr. Jonathan Boreyko, Associate Professor, Department of Mechanical Engineering, College of Engineering
- Dr. Yang Cao, Associate Professor, Department of Computer Science, College of Engineering
- Dr. Daniel Capelluto, Associate Professor, Department of Biological Sciences, College of Science
- Dr. Jing Chen, Associate Professor, Department of Biological Sciences, College of Science
- Dr. Jiangtao Cheng, Associate Professor, Department of Mechanical Engineering, College of Engineering
- Dr. Shengfeng Cheng, Associate Professor, Department of Physics, College of Science
- Dr. David Dillard, The Adhesive & Sealant Science Professor, Department of Biomedical Engineering and Mechanics, College of Engineering
- Dr. William Ducker, Professor, Department of Chemical Engineering, College of Engineering
- Dr. Alan Esker, Professor, Department of Chemistry, College of Science
- Dr. Silke Hauf, Associate Professor, Department of Biological Sciences, College of Science
- Dr. Jean Heremans, Professor, Department of Physics, College of Science
- Dr. Sohan Kale, Assistant Professor, Department of Mechanical Engineering, College of Engineering
- Dr. Nadir Kaplan, Assistant Professor, Department of Physics, College of Science
- Dr. Giti Khodaparast, Professor, Department of Physics, College of Science
- Dr. Shihoko Kojima, Associate Professor, Department of Biological Sciences, College of Science
- Dr. Guoliang (Greg) Liu, Associate Professor, Department of Chemistry, College of Science
- Dr. Louis Madsen, Professor, Department of Chemistry, College of Science
- Dr. James McClure, Research Associate Professor, Dr. James McClure, National Security Institute
- Dr. Steve Melville, Associate Professor, Department of Biological Sciences, College of Science
- Dr. Djordje Minic, Professor, Department of Physics, College of Science
- Dr. Reza Mirzaeifar, Associate Professor, Department of Mechanical Engineering, College of Engineering

- Dr. Vinh Nguyen, Associate Professor, Department of Physics, College of Science
- Dr. Alexey Onufriev, Professor, Department of Computer Science, College of Engineering
- Dr. Mark Paul, Professor, Department of Mechanical Engineering, College of Engineering
- Dr. John Phillips, Professor, Department of Biological Sciences, College of Science
- Dr. Michel Pleimling, Professor, Department of Physics and Associate Dean for Undergraduate Programs, College of Science
- Dr. David Popham, Professor, Department of Biological Sciences, College of Science
- Dr. Rui Qiao, Professor, Department of Mechanical Engineering, College of Engineering
- Dr. Hans Robinson, Associate Professor, Department of Physics, College of Science
- Dr. Vicki Soghomonian, Associate Professor, Department of Physics, College of Science
- Dr. Carolina Tallon, Assistant Professor, Department of Materials Science and Engineering, College of Engineering
- Dr. Uwe Täuber, Professor, Department of Physics, College of Science, Faculty of Health Sciences
- Dr. Layne Watson, Professor, Department of Computer Science, College of Engineering

Affiliated Emeriti Faculty Members (5):

- Dr. Herve Marand, Professor emeritus, Department of Chemistry, College of Science
- Dr. Jimmy Ritter, Associate Professor emeritus, Department of Physics, College of Science
- Dr. John Tyson, University Distinguished Professor emeritus, Department of Biological Sciences, College of Science
- Dr. Dick Zallen, Professor emeritus, Department of Physics, College of Science
- Dr. Royce Zia, Professor emeritus, Department of Physics, College of Science

3. List of Postdocs and Students Supported by Center Administered Funds

Postdoctoral research associates:

- Dr. Sudipta Gupta, Physics, February 2021 - February 2022, SU 235371
- Dr. Vinh Ho, Physics, since May 2020, NASA 426703, and NASA 419463
- Dr. Wenya Shu, Physics, since September 2020, SU 235741
- Dr. Reda Tiani, Physics, since December 2021, funded through a Belgian American Educational Foundational (B.A.E.F.) grant and postdoctoral fellowship from the Free University of Brussels, Belgium
- Dr. Igor Tolokh, Computer Sciences, since May 2009, NIH IR21GM131228

Graduate research assistants:

- Sebastian Byrd, physics, GRA summer 2021, NSF 480341
- Chi Chen, physics, ½ GRA summer 2022, SU 235371

- Jason Czak, physics, GRA summer 2021, ½ GRA Fall 2021, DOE 450484
- Kenneth Distefano, physics, GRA summer II 2022, NSF 480724
- Luan Doan, physics GRA summer 2020 and 2021, AFOSR 450618
- Eugenia Datsomor, Biological Sciences, GRA summer 2022, 100% Capelluto grant, GTA summer 2022, 50% DEI department fellowship and 50% Biological Sciences
- Kalani Ellepola, physics, GRA summer 2022, CeZAP 179965
- Dan Folescu, Competer Science, GRA summer and fall 2021, GRA spring 2022, NIH 1R21GM131228
- Mahmudul Hasan, Biological Sciences, GRA summer 2022, 50% Biological Sciences, 50% Capelluto grant fund, GTA summer 2022, 100% Biological Sciences
- Ryan Xi Hao, physics, GRA summer 2021, AFOSR 450589
- Yisheng Huang, ½ GRA summer 2022, NSF 480341
- Teshani Kumarage, physics, GRA fall 2021, Jeffress 453107, GRA spring 2022, NSF 480672, summer 2022, Jeffress 453107
- Bingham Liu, physics, GRA summer 2021and 2022, NSF 480341
- Ayoyinka Okedigba, Chemistry, GTA summer 2022, 100% Chemistry, GRA summer 2022, 50% Capelluto grant, 50% Biological Sciences
- Hadi Rahmaninejad, physics, GRA fall 2012, SU 235371, ½ GRA summer 2022, NSF 480672
- Tiffany Roach, Biological Sciences, GRA summer 2022, 50% IMSD, 50% MAOP
- James Stidham, physics, GRA summer 2021, ½ GRA Fall 2021, DOE 429262
- Mohamed Swailem, physics, ½ GRA fall 2021 and spring 2022, GRA May 2022, NSF 480724
- Tuo-Xian Tang, Biological Sciences, GRA spring 2021, Hunkler Fellowship
- Junwen Wang, physics, GRA summer 2021, AFOSR, 450589
- Hong Yao, physics, GRA summer 2021, DOE 429262
- Fangzhou Yu, ½ GRA summer 2022, NS 480341

Undergraduate research students:

- Wally Borden, physics, summer 2021, fall 2021 and spring 2022, Jeffress 453107
- John Caudill, chemical engineering, summer 2022, Jeffress 453107
- Grant Davis, physics, summer 2022, NSF 480341
- Nash Gatenby-Latham, physics, fall 2021, ARO 450484
- Alex Habibi, nanomedicine and biological sciences, summer 2022, Jeffress 453107
- Andrew Johnson, physics, summer 2022, NSF 480672
- John McLaughlan, physics, summer 2022, NSF 480341
- Hana Mir, physics, summer and fall 2021, ARO 450484; spring and summer 2022, NSF 480724
- Nick Morris, physics, summer 2022, Jeffress 453107
- Eleni Ziu, physics, fall 2021, spring 2022, and summer 2022, Jeffress 453107
- Maria Ziu, physics, fall 2021, spring 2022, and summer 2022, Jeffress 453107

4. Classified Staff

- Katrina Loan, Program Support Technician, funded through A-21 program. During her sixth year, Ms. Loan's salary will be provided by the Office of the Vice President for Research (10%) and the Center for Soft Matter and Biological Physics (90%).

5. Department fiscal staff

- Jacqueline Woodyard, Business Manager, Department of Physics
- Sherri Collins, Assistant Business Manager, Department of Physics

III. Amendments to the Center Charter

Not applicable.

IV. Stakeholder Committee

The Center does not have an established Stakeholder Committee. We propose as members:

- Dr. Mark Pitt, Professor and Chair, Department of Physics
- Dr. John Morris, Professor, Department of Chemistry and Associate Dean for Research and Graduate Studies, College of Science
- Dr. Daniel Sui, Professor, Vice President for Research, and Innovation

V. Major Grants Received in 2020-2021

New grants:

- U. S. National Science Foundation (NSF 480575), Division of Materials Research – DMR, grant #2104602, *Tapered Bottlebrush Block Copolymers: Synthesis, Solution Self-Assembly, and Simulations*, PI John Matson (Chemistry, 85%), co-PI Rana Ashkar (Physics, 15%), June 1, 2021 – May 31-2024, total volume $ 441,459 for three years.

- The Thomas F. and Kate Miller Jeffress Memorial Trust, *Reversing pathology through informed molecular regulation of lipid rafts*; PI Rana Ashkar (Physics, 70 %), co-PI Sanket Deshmukh (Chemical Engineering, 30 %); July 1, 2021 – June 30, 2022; total volume $ 100,000 for one year.

- National Aeronautics and Space Administration, Langley Research Center, *Multi-layer photon sieve telescope on glass*, PI Vinh Nguyen (Physics, 100%), September 01, 2022 – August 31, 2023; total volume $ 65,067 for one year.

Continuing grants:

- National Aeronautics and Space Administration (NASA 418127), *Clouds, and the Earth's radiant energy system (CERES) analytical modeling with the MCRT environment, SSAI/NASA*. PI Bob Mahan (Mechanical Engineering, 60 %), co-PI Vinh Nguyen (Physics, 40 % - 418266): December 1, 2016 – November 30, 2021; total volume $ 912,459 for five years.

- U.S. Army Research Office (ARO 450484), Engineering Sciences Directorate, Mechanical Sciences Division, *Control of universal scaling, noise strength, and pattern formation in critical dynamics*, PI Uwe C. Täuber (Physics, 50 %), co-PI Michel Pleimling (Physics, 50 %), with subcontract to P. S. Krishnaprasad (Electrical and Computer Engineering, University of Maryland): April 15, 2017 – August 14, 2022; total volume $ 1,654,294 for four years.

- U.S. National Science Foundation (NSF 418270), Division of Chemistry – CHE, Structure, Dynamics, and Mechanisms B, CHE-1665157, *Unraveling connections among biomolecular structure, interfacial solvent dynamics, and conformational dynamics*; PI Katie Mitchell-Koch (Wichita State University, 50 %), co-PI Vinh Nguyen (Physics, 50 %); August 1, 2017 – January 31, 2022; total volume $ 441,000 for four years.

- Luther and Alice Hamlett Undergrad Research (444364), PI Vinh Nguyen (Physics, 100 %): September 10, 2017 – June 30, 2025; total volume $ 63,500 for eight years.

- U.S. Air Force Office of Scientific Research (AFOSR 450589) grant FA9550-18-1-0433, *Understanding enhancement of strength in CNT/NGP-based structural composites*. PI Gary Seidel (Ocean and Aerospace Engineering, 50%), co-PI Shengfeng Cheng (Physics, 50%): June 15, 2018 – December 31, 2021; total volume $ 618,229 for three years.

- U.S. Department of Defense, Air Force Office of Scientific Research (AFOSR 450618), FA9550-18-1-0263, *Impact of hydration and collective dynamics on protein functions*, PI Vinh Nguyen (Physics, 100 %): July 1, 2018 – June 30, 2022; total volume $ 488,779 for five years.

- U.S. Department of Energy (DOE 429262), Office of Basic Energy Sciences (BES) grant *DE- FG02-09ER46613*, *non-equilibrium relaxation, aging scaling, and critical depinning dynamics of Skyrmions in disordered magnetic films*, PI Uwe C. Täuber (Physics, 50 %), co-PI Michel Pleimling (Physics, 50 %): August 15, 2018 – December 31, 2021; total volume $ 450,000 for three years.

- National Aeronautics and Space Administration (NASA 426703): Earth Science Technology Office (ESTO), *Graphene and plasmonic enhanced long-wavelength photodetectors for Earth radiation budget instruments*, PI Vinh Nguyen (Physics, 100 %): September 20, 2018 – March 31, 2022; total volume $ 260,000 for three years.

- U.S. National Institutes of Health (NIH) 1R21GM131228, *Accurate yet fast implicit solvation,* PI Alexey Onufriev (Computer Science, 100%): March 1, 2019 – February 28, 2021; total volume $ 250,000 for two years.

- U.S. National Science Foundation (NSF 480222), Division of Materials Research (DMR), *Lithography on a nanosphere-an optical approach to arbitrarily patterned patchy particles,* PI Hans Robinson (Physics, 70%), co-PI Webster Santos (Chemistry, 30%): August 26, 2019 – August 31, 2022; total volume $ 286,821 for three years.

- U.S. National Science Foundation (NSF 480341), Division of Materials Research (DMR), Condensed Matter and Materials Theory, *CAREER: Nonequilibrium physics in drying soft matter solutions*; PI Shengfeng Cheng (Physics, 100%): June 1, 2020 – May 31, 2025; total volume $ 514,786 for five years.

- National Aeronautics and Space Administration (NASA 419463), Langley Research Center, *Diffractive optics*, PI: Dr. Vinh Nguyen, (Physics, 100%); December 15, 2020 – November 30, 2021; total volume $ 12,571 for one year.

- U.S. Army Research Office (ARO 450799), Undergraduate Research Apprenticeship Program (URAP) supplement through ARO Broad Agency Announcement (BAA), *Control of universal scaling, noise strength, and pattern formation in critical dynamics*; PI Uwe C. Täuber (Physics, 50 %), co-PI Michel Pleimling (Physics, 50 %), May 15 – August 14, 2021; total volume $ 9,000 for three months.

- National Aeronautics and Space Administration (NASA 426733), Advanced Component Technology, *Smart Polyimide Expandable Collector to enable Investigations for Earth Science (SPECIES)*, PI Vinh Nguyen (Physics, 100%), August 1, 2021 – July 31, 2024; total volume $ 210,421 for three years.

- U.S. National Science Foundation (NSF 480672), Division of Molecular and Cellular Biosciences (MCB), Molecular Biophysics: *EAGER: Topographically induced lateral organization in biomimetic lipid membranes;* PI Rana Ashkar (Physics, 100%): August 1, 2021 – July 31, 2023; total volume $ 297,204 for two years.

- Joint U.K. Engineering and Physical Sciences Research Council (EPSRC) / U.S. National Science Foundation (NSF 480724) – Division of Mathematical Sciences (DMS) grant
  EPSRC EP/V014439/1 & NSF-DMS-2128587,
  Eco-evolutionary dynamics of fluctuating populations.
  PIs: Mauro Mobilia and Alastair Rucklidge (Department of Applied Mathematics, University of Leeds, U.K.), £ 443,468.
  PI Uwe C. Täuber (Physics, 50 %), co-PI Michel Pleimling (Physics, 50 %),
  August 15, 2021 – August 14, 2024; total volume $ 300,000 for three years.

- Center for Emerging, Zoonotic, Arthropod-borne Pathogens (CeZAP), *Molecular Design of Robust Biocompatible Liposomal Carriers of mRNA Vaccines*, PI Rana Ashkar (Physics, 75%), co-PI Kevin Edgar (Sustainable Biomaterials, 25%), Dec. 1, 2021 – June 30, 2022; total volume $ 19,000 for seven months.

VI. Major Proposals Submitted or Pending

- Concept paper, Keck Foundation, pending ($1M – 3 years, PI: Rana Ashkar 60%, co-PI: Alex Sodt 20%, Michael Brown 20%), down-selected internally for discussion with Keck program manager and invited for a Phase I submission (May 2, 2022).

- U.S. National Science Foundation (NSF), *Manufacturing durable surfaces of biodegradable metal via femtosecond laser short peening assisted mechanochemical process*, PI Rebecca Cai (Materials Science, COE, 50%), co-PI Vinh Nguyen (Physics, 50%): October 1, 2021 – September 30, 2024; total volume $ 578,429 (May 2021).

- *Engineering Polymers and Tackling End-of-Life Waste (CREATE): Computation- and Characterization-Guided Design, Synthesis, and Re/Up-cycling of High-Value Polymers and Composites*, PI Guoliang (Greg) Liu (Chemistry, COS, 10%), co-PI Shengfeng Cheng (Physics, 5%): September 1, 2022 – August 31, 2026; total volume $16,000,000 (May 2022).

VII. Significant Accomplishments in 2021-2022

1. Center for Soft Matter and Biological Physics Symposium

The Center held its sixth annual (hybrid) symposium May 18 and 19, 2022, organized by Rana Ashkar, Shengfeng Cheng, and Nadir Kaplan. The symposium featured three invited external keynote speakers and thirteen internal Virginia Tech presenters from different departments. On May 18, a poster session was held. Awards were announced at the end of the symposium on May 19.

- Mojtaba Edalatpour, Mechanical Engineering, Virginia Tech
  Three-phase heat transfer
- Keynote: Ronit Freeman, Applied Physical Science, UNC Chapel Hill,
  Designing Functional Bioinspired Materials: Beyond Biology
- Sohan Kale, Mechanical Engineering, Virginia Tech
  Mapping mechanical stress in curved epithelial sheets
- Chinmay Katke, Physics, Virginia Tech
  An electrohydrodynamic theory for the onset of compartmentalization of lipid bilayer-based model protocells
- Teshani Kumarage, Physics, Virginia Tech
  Sterol conjugated lipids for improved liposomal stability

- Louis Madsen, Chemistry, Virginia Tech
  Understanding a double-helix ionic polymer composite electrolyte
- Keynote: Elisabetta Matsumoto, Physics, Georgia Tech
  Twisted topological tangles or: the knot theory of knitting
- Sohan Kale, Mechanical Engineering, Virginia Tech
  Mechanics of microbial adhesion on nano-patterned surfaces
- Yang Li, Mechanical Engineering, Virginia Tech
  Modeling liquid droplet impact and splash on a micropillar-arrayed viscoelastic surface
- Binghan Liu, Physics, Virginia Tech
  Controlling stratification of colloids using a mixed binary solvent
- Keynote: Yun Liu, Center for Neutron and Physics, University of Delaware
  Colloidal gelation driven by solvent fluctuation induced forces
- James McClure, National Security Institute, Virginia Tech
  Mesoscopic modeling for biological membranes
- Djordje Minic, Physics, Virginia Tech
  On the emergent "quantum" theory in complex adaptive systems
- Hana Mir, Physics, Virginia Tech
  Emerging spatiotemporal patterns in cyclic predator-prey systems with habitat
- Alexey Onufriev, Computer Science, Virginia Tech
  Polymers off the Hooke: the curious case of DNA double helix
- Tiffany Roach, Biological Sciences, Virginia Tech
  Insights into the adaptor functions of TOM1 in health and disease
- Mohamed Swailem, Physics, Virginia Tech
  Periodically varying food resources in a predator-prey ecology

During the poster session on May 18, the poster prize of $100.00 each was awarded to:

- Ayoyinka Okedigba, Chemistry, Virginia Tech
  Quantification of the content and activity of Kunitz and Bowman-Birk trypsin inhibitors in soybean meal to establish high through put phenotyping methods
- Hadi Rahmaninejad, Physics, Virginia Tech
  Characterization of polyelectrolyte brushes nanochannels for nanofluidic applications

The Most Engaging Discussion award of $100.00 was given to:

- Liev Birman, Physics, Virginia Tech

The Outstanding Presentation prize of $100.00 each was awarded to:

- Teshani Kumarage, Physics, Virginia Tech
- Tiffany Roach, Biological Sciences, Virginia Tech

On May 19, the Graduate Student Workshop featured tutorials by our keynote speakers:

- Prof. Ronit Freeman, Applied Physical Science, UNC Chapel Hill,
  Engineering cell-material interfaces to decode how cells Communicate with their environment
- Prof. Yun Liu, Center for Neutron and Physics, University of Delaware
  Studying soft matter with neutron scattering
- Prof. Elisabetta Matsumoto, Physics, Georgia Tech
  Curvature, Crystallography and Orbifolds, Oh My

2. Center for Soft Matter and Biological Physics Seminar Series

The Center held seminars through the fall 2021 and the spring 2022 semesters (Mondays 4.00 – 5.00 p.m.), organized by Vinh Nguyen, to promote scientific exchange and incite possible research collaborations (https://csmb.phys.vt.edu/events/Seminar.html):

- October 11, 2021: Prof. Sunxiang Huang, University of Miami
  The multifaceted physics of correlated topological Kagome metals in thin films
- November 1, 2021: James Stidham, Physics, Virginia Tech
  Asymmetric cyclic predator-prey systems
- November 15, 2021: Yifei Wang, Physics, Virginia Tech
  Broadband photodetectors based on graphene/semiconductor heterostructures
- December 6, 2021: Jason Czak, Physics, Virginia Tech
  Creating novel patterns with spatially localized perturbations in chaotic systems
- March 21, 2022: Prof. Lei Li, University of Pittsburg
  Are graphitic surfaces hydrophobic?
- March 28, 2022: Dr. Reda Tiani, Physics, Virginia Tech
  Chemical fronts and the effects of convection
- April 25, 2022: Prof. Xiang Cheng, University of Minnesota
  Locomotion of flagellated bacteria: From the swimming of single bacteria to the collective motion of bacterial swarms

3. Center for Soft Matter and Biological Physics Discussion Meetings

The Center held informal meetings, organized by Vinh Nguyen, to promote scientific exchange and incite research collaborations, Fridays, 4.00 – 5.00 p.m. during the semesters and on Mondays over the summer months (https://csmb.phys.vt.edu/events/Discussion.html):

- July 5, 2021: Dr. Ruslan Mukhamadiarov, Physics, Virginia Tech
  Critical dynamics of the susceptible-infectious-recovered (SIR) model on a lattice
- July 12, 2021: Dr. Johannes Zierenberg, Max Planck Institute for Dynamics, and Self-Organization, Göttingen and Georg August University, Germany
  Temporal resonance between disease progression and contact patterns shapes epidemic spread

- July 19, 2021: Prof. Yifei Wang, Physics, Virginia Tech
  Graphene mid-infrared photodetectors based on blocked silicon impurity bands
- July 26, 2021: Teshani Kumarage, Physics, Virginia Tech
  Biophysical effects of melatonin and azithromycin on model pulmonary membranes
- August 2, 2021: Prof. Ronald Dickman, Universidade Federal de Minas Gerais, Brazil
  Phase diagram and interfacial instabilities in the driven Widom-Rowlinson lattice gas
- November 5, 2021: Wenya Shu, Physics, Virginia Tech
  A bio-chemo-mechanical multiscale theory for mechanosensitive cell migration on the viscoelastic substrate
- December 3, 2021: Junwen Wang, Physics, Virginia Tech
  An analytic form of the integrated Lennard-Jones potential for thin rods
- April 1, 2022: Mahmudul Hasan, Biological Sciences, Virginia Tech
  The PH domain and C-terminal polyD motif of Phafin2 exhibit a unique concurrence in animals
- April 22, 2022: Seokgyun Ham, Mechanical Engineering, Virginia Tech
  Modulation of slippage at brine-oil interfaces by surfactants: The effects of surfactant density and tail length
- April 22, 2022: Hongwei Zhang, Mechanical Engineering, Virginia Tech
  Thermo-electrics in ice slabs: Charge dynamics and thermo-voltages

4. Research Publications with Center Affiliation

- Sudipta Gupta and Rana Ashkar,
  The dynamic face of lipid membranes,
  Soft Matter **17**, 6910 (8 July 2021).
  [https://doi.org/10.1039/D1SM00646K].

- Nazia Munir, James Mahan, Luan C. Doan, Nguyen Q. Vinh, and Kory Priestley,
  Gold-black manufacture, microstructure, and optical characterization,
  Applied Optics **60**, (4 August 2021).
  [https://doi.org/10.1364/AO.430686]

- Yifei Wang, Vinh X. Ho, Prashant Pradhan, Michael P. Cooney, and Nguyen Q. Vinh,
  Interfacial photogating effect for hybrid graphene-based photodetectors,
  ACS Applied Nano Materials 2021, **4**, 8539-8545 (11 August 2021).
  [https://doi.org/10.1021/acsanm.1c01931]

- Shannon R. Serrao and Uwe C. Täuber,
  Stabilizing spiral structures and population diversity in the asymmetric May-Leonard model through immigration,
  European Physical Journal B **94**, 175, 1 – 15 (24 August 2021).
  [https://link.springer.com/article/10.1140/epjb/s10051-021-00168-x]

- Yunhui Peng, Shuxiang Li, Alexey Onufriev, David Landsman, and Anna R. Panchenko
Binding of regulatory proteins to nucleosomes is modulated by dynamic histone tails,
Nature Communications **12**, 5280 (6 September 2021).
[https://www.nature.com/articles/s41467-021-25568-6]

- Yisheng Huang and Shengfeng Cheng,
Chain conformations and phase separation in polymer solutions with varying solvent quality,
Journal of Polymer Science **59**, 2819 – 2831 (2 October 2021).
[https://doi.org/10.1002/pol.20210526]

- Egor S Kolesnikov, Ivan Yu. Gushchin, Petr A. Zhilyaev, and Alexey V. Onufriev,
Similarities and differences between Na+ and K+ distributions around DNA obtained with three popular water models,
Journal of Chemical Theory and Computation **17**, 7246-7259 (11 October 2021).
[https://pubs.acs.org/doi/10.1021/acs.jctc.1c00332]

- Ksenia S. Onufrieva and Alexey V. Onufriev,
How to count bugs: A method to estimate the most probable absolute population density and its statistical bounds from a single trap catch,
Insects **12**, 932 (13 October 2021).
[https://europepmc.org/backend/ptpmcrender.fcgi?accid=PMC8540812&blobtype=pdf]

- Riya Nandi, Uwe C. Täuber, and Priyanka,
Dynein-inspired multilane exclusion process with open boundary conditions,
Entropy **23**, 1343, 1 – 13 (14 October 2021).
Figures featured on journal's main homepage.
[https://pubmed.ncbi.nlm.nih.gov/34682067/]

- Xiang Li, Mauro Mobilia, Alastair M. Rucklidge, and R.K.P. Zia,
How does homophily shape the topology of an adaptive network?
Physical Review E **104**, 044311 (19 October 2021).
[https://doi.org/10.1103/PhysRevE.104.044311]

- Wenbo Wang, Chang-Yu Hung, Leslie Howe, Jia Chen, Kaiwen Wang, Vinh X. Ho, Shannon Lenahan, Mitsuhiro Murayama, Nguyen Q. Vinh, and Wenjun Cai,
Enabling high-performance surfaces of biodegrade magnesium alloys via femtosecond laser shock peening with ultra-low pulse energy,
ACS Applied Biomaterials 2021, **4,11,** 7903-7912 (26 October 2021).
[https://pubs.acs.org/doi/full/10.1021/acsabm.1c00826]

- Nishant Shirodkar, Shengfeng Cheng and Gary Seidel,
Enhancement of mode I fracture toughness properties of epoxy reinforced with graphene nanoplatelets and carbon nanotubes,
Composites Part B Engineering 224, 109177 (1 November 2021).
[https://doi.org/10.1016/j.compositesb.2021.109177]

- Jeffrey F. Ellena, Tuo-Xian Tang, Narasimhamurthy Shanaiah, and Daniel G. S. Capelluto,
Backbone ^{1}H, ^{15}N, and ^{13}C resonance assignments of the Phafin2 pleckstrin homology domain,
Biomolecular NMR Assignments, Springer Link **16,** 27-30, 2022 (5 November 2021).
[https://doi.org/10.1007/s12104-021-10054-3]

- Abhishek K. Singh, Chengyuan Wen, Shengfeng Cheng, and Nguyen Q. Vinh,
Long-range DNA-water interactions,
Biophysical Journal **120**, 4966 - 4979 (16 November 2021).
[https://doi.org/10.1016/j.bpj.2021.10.016]

- Justin R. Barone
Stimuli-responsive green materials,
Green Materials 9(4), **145** (14 December 2021).
[https://doi.org/10.1680/jgrma.2021.9.4.145]

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Signaling proteins for endosomal and lysosomal function,
Front Cell Developmental Biology, G. Editorial **821719** (16 December 2021).
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Lauren M. Childs, and Uwe C. Täuber,
Requirements for the containment of COVID-19 disease outbreaks through periodic testing, isolation, and quarantine,
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Microemulsions in the driven Widom-Rowlinson lattice gas,
Physical Review E **104**, 064135 (27 December 2021).
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Effects of homophily and heterophily on preferred-degree networks: mean-filed analysis and overwhelming transition,
Journal of Statistical Mechanics: Theory and Experiment P013402 (12 January 2022).
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Strong interactions between highly dynamic lamina-associated domains and the nuclear envelope stabilize the 3D architecture of Drosophila interphase chromatin,
Cold Spring Harbor Laboratory, bioRxiv 478236 (28 January 2022).
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The origin and impact of bound water around intrinsically disordered proteins,
Biophysical Journal **121**, 540 (15 February 2022),
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- †S. Gupta, †F.T. Doole, T. Kumarage, M. Doktorova, G. Khelashvili, Rana Ashkar*, M.F. Brown*. (2021). *Cholesterol stiffening of lipid membranes and drug interactions: Insights from neutron spin echo and deuterium NMR spectroscopy,*
invited book chapter in: Cholesterol (Elsevier), Chap. 29, eds. Alex Dopico and Anna Bukiya (29 April 2022).
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- Hana Mir, James Stidham, and Michel Pleimling,
Emerging spatiotemporal patterns in cyclic predator-prey systems with habitats,
Physical Review E **105**, 054401, 1 – 10 (2 May 2022).
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- Alexander Y. Afanasyev and Alexey V. Onufriev,
Stretching of long double-stranded DNA and RNA described by the same approach,
Journal of Chemical Theory and Computation **18**, 3911-3920 (11 May 2022).
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Up to 50% reduction in water vaporization enthalpy by block copolymer-based porous carbon fibers,
Macromolecules **55**, 4803 - 4811 (23 May 2022).
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- Luan C. Doan, Jayangika N. Dahanayake, Katie R. Mitchell-Koch, Abhishek K. Singh, and Nguyen Q. Vinh,
  Probing adaptation of hydration and protein dynamics to temperature,
  ACS Omega **7**, 22020 (13 June 2022).
  [https://doi.org/10.1021/acsomega.2c02843]

- Laura E. Hanzly, Natasha Chauhan, and Justin R. Barone
  Mechanically cycling gelatin bilayers,
  Smart Materials and Structures **31,** 8, 085005 (30 June 2022).
  [https://iopscience.iop.org/article/10.1088/1361-665X/ac798e/meta]

5. Submitted Papers with Center Affiliation

- C. Nadir Kaplan and L. Mahadevan,
  Geometrical dynamics of edge-driven surface growth,
  submitted to Proceedings of the Royal Society A (27 July 2021).
  [arXiv:2107.14232v1]

- H.L. Scott, A.C. Dixson, R.F. Standaert, C.B. Stanley, L.-R. Stingaciu, J.-M. Carrillo, B. Sumpter, J. Katsaras, W. Qiang, F.A. Heberle, Rana Ashkar, and F.N. Barrera,
  Membranes dynamically respond to changes in protein conformation,
  submitted to Angewandte Chemie (28 April 2022).

- L. Hong Yao and Uwe C. Täuber,
  Critical dynamics of the antiferromagnetic O(3) nonlinear sigma model with conserved magnetization, submitted to Physical Review E (1 June 2022).
  [arXiv:2204.11145]

- Ruslan I. Mukhamadiarov and Uwe C. Täuber,
  Effects of lattice dilution on the non-equilibrium phase transition in the Susceptible-Infectious-Recovered model, submitted to Physical Review E (8 June 2022).
  [arXiv:2206.03906]

- Mahmudul Hasan and Daniel G. S. Capelluto,
  The PH domain and c-terminal polyD motif of Phafin2 exhibit an unique concurrence in animals,
  Membranes **12**, in press (7 July 2022).
  [https://www.mdpi.com/2077-0375/12/7/696]

- Abhishek K. Singh, Luan C. Doan, Djamila Lou, Chengyuan Wen, and Nguyen Q. Vinh,
  Interfacial layers between ion and water detected by terahertz spectroscopy,
  Submitted to: Journal of Molecular Liquids (3 August 2022).
  [https://aip.scitation.org/doi/10.1063/5.0095932]

6. Invited Presentations with Center Affiliation

- Rana Ashkar,
  The dynamic interplay between cell membranes and membrane proteins,
  71st American Crystallographic Association Annual Meeting, (virtual 3 August 2021)
  Cell membranes from the lens of neutron scattering and computer simulations,
  2021 Joint Nanoscience and Neutron Scattering Virtual User Meeting,
  Oak Ridge National Lab, (virtual 11 August 2021)
  How mesoscopic membrane mechanics modulate cellular functions,
  American University of Beirut, Physics (virtual 9 March 2022)
  Cholesterol stiffening of phosphatidylcholine membrane depends on the degree of acyl chain unsaturation,
  257th ACS Annual Meeting (virtual 22 March 2022)
  Membranes in action: How mesoscopic membrane mechanics regulate cellular functions,
  University of Windsor, Canada, Chemistry and Biochemistry, (virtual 30 March 2022)
  Domain induced dynamics in phase-separating lipid membranes,
  Biological Membranes and Membrane Proteins, Santa Fe Meeting (21 June 2022)

- Daniel. G. S. Capelluto,
  Molecular mechanism of phosphoinositide-dependent control of protein trafficking,
  LIPIDS 2021, Shemyakin-Ovchinnikov Institute of Bioorganic Chemistry RAS, Moscow (virtual 12 October 2021)
  Mechanisms for protein commitment to cargo trafficking,
  Virginia Academy of Science

- Michel Pleimling,
  Non-equilibrium dynamics in systems with disorder: ferromagnets and magnetic skyrmions,
  Statistical Physics and Low Dimensional Systems, Pont-a Mousson, France (virtual 11-13 May 2022)

- Harshwardhan Chaturvedi, Hiba Assi, Ulirch Dobramysl, Barton L. Brown,
  Michel Pleimling, and Uwe C. Täuber (presenter),
  Non-equilibrium relaxation and critical aging of flux lines following current quenches,
  7th International Conference on Superconductivity and Magnetism (ICSM 2020),
  Bodrum, Turkey (virtual, 26 October 2021)

- Juan Garrahan, Nigel Goldenfeld, Itamar Procaccia, Gilles Tarjus, and Uwe C. Täuber,
  Open problems in classical non-equilibrium criticality and scaling,
  invited discussion forum, KITP Program *Non-Equilibrium Universality: From Classical to Quantum and Back* (virtual, 29 October 2021)

- Ronald Dickman, Hugues Chatè, Celia Antoneodo, Raissa D'Souza, and Uwe C. Täuber,

Physical Review journals editors chat,
invited discussion forum, Encontro Nacional de Fisica Estatistica (ENFE 2021) / Brazilian Meeting on Statistical Physics (virtual, 23 November 2021)

- Nguyen Q. Vinh,
  Influence of Hydration and DNA/Protein Collective Motions on Biological Activities,
  Institute of Photonics and Electronics of the Czech Academy of Sciences, Prague, Czech Republic, Bio electrodynamics, (virtual, 27 September 2021).
  Graphene-Semiconductor Nanostructures Enabled Broadband Photodetection,
  Materials Science and Engineering, Phenikaa University, Hanoi, Vietnam,
  (virtual 27 June 2022)

- R. K. P. Zia,
  Understanding Complex Physical Systems: a glimpse into the topics awarded the 2021 Nobel Prize in Physics
  Department of Physics, Virginia Tech, (4 March 2022)
  Department of Physics, University of Houston, (21 April 2022)
  Optimal shot-put release angle revisited: solving a maximization problem without calculous
  Spring 2022 Semi-virtual meeting of Chesapeake Section of the American Association of Physics Teachers, Radford University, VA, (virtual 4 April 2022)

7. Provisional Patents

Not applicable.

8. Awards and Recognitions

Faculty:

- Rana Ashkar was elected as a member of the advisory committee of the Quite Intense Kinetics Reflectometer (QIKR) and the Wide-Angel Spin Echo (EXPANSAE) instruments to be commissioned at the Second Target Station (STS) at Oak Ridge National Lab (2021-2024)

Graduate students:

- Liev Birman, Physics, Virginia Tech
  Most Engaging Discussion Award, Center Soft Matter and Biological Physics Symposium 18-19 May 2022

- Eugenia Datsomor, Biological Sciences, Virginia Tech
  Diversity, Equity, and Inclusion Fellowship
  Fall 2021

- Sam Garbera, Biological Systems Engineering, Virginia Tech

2022 Undergraduate Student Scholarship, American Chemical Society Rubber Division, 14 April 2022

- Teshani Kumarage, Physics, Virginia Tech
  Invited to 2022 International Young Leaders Forum, American Physical Society, January 2022
  Biophysical Society Travel Award, 66th Biophysical Society Annual Meeting 2022*,* 19-23 February 2022
  Wan-Zia Graduate Fellowship, Department of Physics, May 2022
  Outstanding Poster Presentation Award, Center Soft Matter and Biological Physics Symposium, 18-19 May 2022

- Hadi Rahmaninejad, Physics, Virginia Tech
  Outstanding Poser Presentation Award, Center Soft Matter and Biological Physics Symposium, 18-19 May 2022
  Student Travel Award, Center Soft Matter and Biological Physics, 7 February 2022
- Ayoyinka Okedigba, Chemistry, Virginia Tech
  Outstanding Poster Presentation Award, Center Soft Matter and Biological Physics Symposium, 18-19 May 2022

- Mohamed Swailem, Physics, Virginia Tech
  Dr. James A. Jacobs Memorial Graduate Fellowship, Department of Physics, 14 April 2022

- Hong Yao, Physics, Virginia Tech
  Clayton D. Williams Graduate Fellowship in Theoretical Physics, Department of Physics, 14 April 2022

Undergraduate students:

- Hana Mir, Physics, Virginia Tech
  Best Presentation Award, Center for Soft Matter and Biological Physics 2022 Annual Symposium, Virginia Tech, 18-19 May 2022
  College of Science Undergraduate Research Award 2022, College of Science, Virginia Tech, April 2022

9. Student Travel Grants

In January 2017, the Center established a grant to support conference travel for graduate students whose advisers who are affiliated with the Center, but do not have current external funding available for this purpose. The students are requested to submit a brief application with presentation title, abstract, and conference description, all connected with research related to the Center's mission. The students can be awarded up to $ 400 for conference travel. Four student travel grants may be issued for each spring and fall semester per year, totaling up to $ 2,000. This year's recipients were:

- Hadi Rahmaninejad, Physics, Virginia Tech
  Characterization of polymer-grafted channels for nanofluidic gating applications,
  2022 American Chemical Society Spring Meeting, San Diego, CA, March 20 – 24, 2022.

- Tiffany Roach, Biological Sciences, Virginia Tech
  Molecular mechanism for the commitment of TOM1 to cargo trafficking,
  66th Annual Biophysical Society Conference, San Francisco, CA, February 19 – 23, 2022

- Mojtaba Edalatpour, Mechanical Engineering, Virginia Tech
  Ice quenching,
  Micro Flow and Interfacial Phenomena, Irvine, CA, June 20 – 23, 2022.

- Seokgyun Ham, Mechanical Engineering, Virginia Tech
  Modulation of slippage at brine-oil interfaces by surfactants: The effects of surfactant density and tail length,
  96th ACS Colloid and Surface Science Symposium, Golden, Colorado, July 10 – 13, 2022.

- Kristen Talley, Biological Sciences, Virginia Tech
  Molecular mechanism for the commitment of TOM1to cargo trafficking,
  66th Annual Biophysical Society Conference, San Francisco, CA, February 19 – 23, 2022

10. Student New Collaboration Incentive Awards

In January 2017, the Center established a grant for graduate students supporting new research collaborations related to the Center's mission, aiding planned or ongoing research involving students from different research groups. The students are to submit a brief application with a description of their planned research. If accepted they can be awarded up to $ 200, later supplemented with a student travel grant. Two grants may be issued in each spring and fall semester per year, totaling up to $ 800.00. This year's recipients were:

- Hadi Rahmaninejad, Physics, and Xi Hao, Macromolecular Science Engineering, Virginia Tech
  Effect of PH and ionic strength on the conformation of polyelectrolyte brushes.

VIII. Industrial Affiliates Program

Not applicable.

IX. Report of Financial Condition

IX. Report of Financial Condition

Center Financial Report Fiscal Year 2022

Operations Account (176188)		
Starting Balance		$ 30,981.61
	Income	
Starts FY2022		$ (26,798.03)
	Expenses	
Ending Balance		$ 4,183.58

Overhead Account (235052)		
Starting Balance		$ 33,029.29
	Income	
Overhead Earnings		$ 12,396.27
	Expenses	
Salary		$ (30,700.97)
Seminar Travel		$ (162.00)
Faculty Travel		$ (1,333.22)
Seminar Supplies and Meals		$ -
Student Travel		$ -
Centers Symposium		$ -
Centers Awards		$ (600.00)
Supplies & Budget		$ (265.83)
Center's Summer workshop		$ -
Other Charges		$ (647.29)
Ending Balance		$ 11,716.25

Overhead Account (235552)		
Starting Balance		$ 8,513.63
	Income	
	Expenses	
Centers Symposium Travel		$ (3,465.44)
Honorariums		$ (600.00)
Meeting Facilities Rentals		$ (504.76)
Centers Symposium Awards		$ (400.00)
Breakfast, Lunch and Dinners		$ (2,444.53)
Food and Dietary supplies		$ (131.10)
Supplies & Budget		$ (68.34)
Continuous Charges Budget		$ (244.50)
Other Charges		$ (654.96)
Ending Balance		$ (0.00)

Center Financial Projection Fiscal Year 2023

Operations Account (176188)		
Starting Balance		$ 4,183.58
	Income	
A21 Award		$ 15,750
	Expenses	
10% Staff Salary (Katrina Loan)		$ (4,482)
Ending Balance		$ 15,451.49

Overhead Account (235052)		
Starting Balance		$ 11,716.25
	Income	
Overhead Earnings		$ 42,000
	Expenses	
Seminar		$ (2,000)
Symposium		$ (5,700)
Student Travel		$ (2,000)
Center's Awards		$ (600)
Supplies & Budget		$ (100)
90% Staff Salary (Katrina Loan)		$ (40,339)
Ending Balance		$ 2,977.29

Overhead Account (235552)		
Starting Balance		$ 5,700.00
	Income	
	Expenses	
Center Symposium Travel		$ (2,000)
Honorariums		$ -
Meeting Facilities Rentals		$ (500)
Centers Symposium Awards		$ (600)
Breakfast, Lunch and Dinners		$ (2,600)
Food and Dietary supplies		$ -
Supplies & Budget		$ -
Continuous Charges Budget		$ -
Ending Balance		$ -

X. Major Issues of the Center

The Center's financial standing remains solid. Since March 2020, owing to the COVID-19 pandemic, expenses had been much reduced.

Until March 2020, the Center maintained a very lively and successful seminar series and discussion meetings. The COVID-19 pandemic naturally affected our regular events severely, forcing us to move our annual symposium, seminars, as well as summer discussion meetings to purely online mode.

We were pleased to run our annual research symposium in hybrid format, with a large in-person component, with three external lecturers, on May 18 and 19, 2022. We were delighted to give out various student awards during this event.

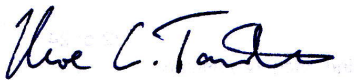
We shall continue to organize annual symposia with external speakers, and to support other related conferences.

Our principal task over the next few years remains to generate new interdisciplinary research collaborations leading to several collaborative grant proposals.

We intend to also explore further new course developments, ideally across departments and colleges, and to establish a summer school related to the Center's research mission.

I am honored to pass on the Center's Directorship to my colleague Dr. Shengfeng Cheng, who will be a vigorous, innovative, and considerate leader.

August 26, 2022



Dr. Uwe C. Täuber
Professor of Physics, Faculty of Health Sciences, Virginia Tech
Director, Center for Soft Matter and Biological Physics (until 31 August 2022)
Lead Editor, Physical Review E

Dr. Shengfeng Cheng
Associate Professor of Physics, Virginia Tech
Director, Center for Soft Matter and Biological Physics (starting 1 September 2022)

Virginia Tech - FINANCE Production

FUND BY ACCOUNT - Year to Date

For the Fiscal Year 2022 through June 30, 2022

-- SUMMARY Report --

Help

Data extract

Sr. Management:	S08	College of Science
Management:	M080	College of Science
Department:	0052	Physics
Organization:	005203	Ctr - Soft Matter & Biological Phys

Fund: **176188** **Center for Soft Matter and Bio. Phy**

Financial Manager: Tauber, Uwe C.

Total Expenditure Budget Balance Remaining: 4,183.58

Percent of Expenditure Budget Used to Date: 86.50

Expenditures

Acct Subgrp	Account Class		Adopted Budget	Revised Budget	Actual to Date June	Actual to Date Fiscal Year	Commitments	Budget Balance Remaining	Percent Used
111	1110	Employee Fringe Benefits Bgt	0.00	6,690.21	319.00	6,579.32	0.00	110.89	98.34
112	1120	Salaries - Budget	0.00	15,750.00	711.78	20,107.82	0.00	(4,357.82)	127.67
119	1190	Other Leave Payout & Recoveries Bgt	0.00	0.00	4.00	110.89	0.00	(110.89)	--N/A--
Total Expenditures - Labor and Benefits			0.00	22,440.21	1,034.78	26,798.03	0.00	(4,357.82)	119.42
120	1200	Misc. Contractual Services Bgt	0.00	8,541.40	0.00	0.00	0.00	8,541.40	0.00
Total Expenditures - Other than labor			0.00	8,541.40	0.00	0.00	0.00	8,541.40	0.00
Total Expenditures for 176188:Center for Soft Matter and Bio. Phy			**0.00**	**30,981.61**	**1,034.78**	**26,798.03**	**0.00**	**4,183.58**	**86.50**

Virginia Tech - FINANCE Production

FUND BY ACCOUNT - Year to Date

For the Fiscal Year 2022 through June 30, 2022

-- SUMMARY Report --

Help

Data extract

Sr. Management:	S08	College of Science
Management:	M080	College of Science
Department:	0052	Physics
Organization:	005203	Ctr - Soft Matter & Biological Phys

Fund: **234504** **PHYS-OH Michel Pleimling**

Financial Manager: Pleimling, Michel J.

Total Expenditure Budget Balance Remaining: 15,787.66

Percent of Expenditure Budget Used to Date: 0.75

Expenditures

Acct Subgrp	Account Class		Adopted Budget	Revised Budget	Actual to Date June	Actual to Date Fiscal Year	Commitments	Budget Balance Remaining	Percent Used
111	1110	Employee Fringe Benefits Bgt	(317.44)	(317.44)	0.00	0.00	0.00	(317.44)	0.00
114	1180	Grad. Teach. & Rsch. Wages - Bgt	(3,363.50)	(3,363.50)	0.00	0.00	0.00	(3,363.50)	0.00
Total Expenditures - Labor and Benefits			(3,680.94)	(3,680.94)	0.00	0.00	0.00	(3,680.94)	0.00
120	1200	Misc. Contractual Services Bgt	21,359.04	22,778.47	0.00	0.00	0.00	22,778.47	0.00
128	1280	Travel, Convention, & Education Bgt	(1,344.40)	(1,344.40)	0.00	120.00	0.00	(1,464.40)	(8.93)
130	1300	Supplies and Materials Budget	(1,845.47)	(1,845.47)	0.00	0.00	0.00	(1,845.47)	0.00
Total Expenditures - Other than labor			18,169.17	19,588.60	0.00	120.00	0.00	19,468.60	0.61
Total Expenditures for 234504:PHYS-OH Michel Pleimling			**14,488.23**	**15,907.66**	**0.00**	**120.00**	**0.00**	**15,787.66**	**0.75**

Virginia Tech - FINANCE Production

FUND BY ACCOUNT - Year to Date

For the Fiscal Year 2022 through June 30, 2022

-- SUMMARY Report --

Help

Data extract

Sr. Management:	S08	College of Science
Management:	M080	College of Science
Department:	0052	Physics
Organization:	005203	Ctr - Soft Matter & Biological Phys

Fund: **235552** **CSB Physics Symposium**

Financial Manager: Tauber, Uwe C.

Total Expenditure Budget Balance Remaining: (682.04)

Percent of Expenditure Budget Used to Date: 113.64

Expenditures

Acct Subgrp	Account Class		Adopted Budget	Revised Budget	Actual to Date June	Actual to Date Fiscal Year	Commitments	Budget Balance Remaining	Percent Used
120	1200	Misc. Contractual Services Bgt	3,513.63	8,513.63	1,064.55	2,132.53	312.00	6,069.10	28.71
128	1280	Travel, Convention, & Education Bgt	(2,175.79)	(2,175.79)	1,196.56	1,196.56	405.09	(3,777.44)	(73.61)
130	1300	Supplies and Materials Budget	(68.34)	(68.34)	0.00	91.91	39.19	(199.44)	(191.83)
141	1400	Awards, Contributions & Claims Bgt	(1,025.00)	(1,025.00)	400.00	400.00	600.00	(2,025.00)	(97.56)
150	1500	Continuous Charges Budget	(244.50)	(244.50)	504.76	504.76	0.00	(749.26)	(206.45)
Total Expenditures - Other than labor			0.00	5,000.00	3,165.87	4,325.76	1,356.28	(682.04)	113.64
Total Expenditures for 235552:CSB Physics Symposium			**0.00**	**5,000.00**	**3,165.87**	**4,325.76**	**1,356.28**	**(682.04)**	**113.64**