

## CV – Eugene Stephane Mananga

NAME: Mananga, Eugene S

EMAILS: emananga@gradcenter.cuny.edu / eugene.mananga@nyu.edu / emananga@bnl.gov

INSTITUTIONS: The City University of New York/New York University/ Brookhaven National Laboratory

### PROFESSIONAL PREPARATION & EDUCATION

INSTITUTION	LOCATION	MAJOR / AREA OF STUDY	DEGREE (if applicable)	YEAR YYYY
<b>Sorbonne University</b> <b>Universite Pierre et Marie Curie</b>	Paris, France Paris VI, France	Physics and Chemistry of Materials	HDR ( <i>Habilitation to direct Research</i> )	2023
<b>Harvard University</b>	Cambridge, MA	Sustainability	Graduate Studies	2022
<b>Massachusetts Institute of Technology</b>	Cambridge, MA	Structure of Materials	Certificate ( <i>MITx</i> )	2020
<b>Harvard University</b> <b>Massachusetts General Hospital</b>	Boston, MA Boston, MA	Nuclear Medicine Medical Physics	Post-doctoral Research Fellow	2011-14
<b>Harvard Medical School</b>	Boston, MA	Applied Biostatistics	Certificate	2012-13
<b>Atomic Energy Commission (CEA)</b>	Saclay, Paris	NEUROSPIN	Research Fellow	2009-11
<b>National High Magnetic Field LAB</b>	Tallahassee, FL	Solid-Sate NMR	Post-doctoral	2007-08
<b>The City University of New York</b>	NYC, New York	AGEP-MAGNET	Chancellor Fellow	2005-07
<b>The City University of New York</b>	NYC, New York	Physics	Ph.D.	2005
<b>The City University of New York</b>	NYC, New York	Physics	M. Phil.	2004
<b>The City College of New York</b>	NYC, New York	Physics	M.A.	2002
<b>The University of Yaounde</b>	Cameroon	Physics	DEA	1992
<b>The University of Yaounde</b>	Cameroon	Physics	M.Sc.	1991
<b>The University of Yaounde</b>	Cameroon	Physics	B. Sc.	1990

### APPOINTMENTS

- **Brookhaven National Laboratory**, Department of Energy, Visiting Scientist 8/2022-8/23
- **Brookhaven National Laboratory**, SHI (Berkeley) & Department of Energy VFaculty 6/2022-8/22
- **Lawrence Berkeley National Laboratory**, U.S. Department of Energy VFP Faculty 6/2021-8/2021
- **Lawrence Berkeley National Laboratory**, U.S. Department of Energy VFP Faculty 6/2020-8/2020
- **Argonne National Laboratory**, U.S. Department of Energy VFP Faculty 6/2019-8/201
- **CUNY Advanced Science Research Center - NanoBioNYC**, Mentor 2022-Present
- **CUNY Academy for Humanities and Sciences**, Executive Board 2019-Present
- **CUNY Academy for Humanities and Sciences**, Program Director of Grants & STEM 2019-Present
- **CUNY Academy for Humanities and Sciences**, Deputy Executive Director 2018- 2019
- **CUNY Academy for Humanities and Sciences**, Member of Board of Director-at-Large 2018-Present
- **CUNY Graduate School and University Center**, Doctoral Faculty of Chemistry 2016-Present
- **NYU - New York University**, Adjunct Professor, Applied Physics 2015-Present
- **CUNY Bronx Community College**, Associate Professor, Physics & Nuclear Medicine 2015-Present
- **CUNY Graduate School and University Center**, Doctoral Faculty of Physics 2015-Present
- **Harvard University & Massachusetts General Hospital**, Research Fellow 2011-2014
- **Atomic Energy Commission of France, CEA-SACLAY**, ‘Ingenieur De Recherche’ 2009-2011
- **National High Magnetic Field Laboratory of USA**, Post-doctoral Research Associate 2007-2008
- **Department of National Education & USTM**, Franceville, Lecturer, Physical Sciences 1995-1999
- **The University of Yaounde**, Teaching Assistant, Physics & Mechanics 1992-1994

## NOTABLE HONORS & AWARDS

- **NOMINATED FOR THE PRESIDENTIAL AWARDS FOR EXCELLENCE IN SCIENCE, MATHEMATICS, AND ENGINEERING MENTORING** 2023  
Source of Award: *The National Science Foundation (NSF) administers the awards program on behalf of the White House Office of Science and Technology Policy (OSTP). OSTP selects both individuals and organizations to receive the honor. Each Presidential Awardee receives a certificate signed by the President of the United States and a \$10,000 award from NSF. Awardees are honored at an award ceremony which takes place in Washington, D.C.*
- **JUNIOR FACULTY RESEARCH AWARD IN SCIENCE AND ENGINEERING** 2022  
Source of Award: *Alfred P. Sloan Foundation*  
Award: *For potential to make a significant contribution to Physics, to NMR & LIB fields, to CUNY, and to society*
- **BROOKHAVEN NATIONAL LABORATORY** 2022  
Source of Honor: *Sustainable Horizons Institute (Berkeley) & DOE Visiting Faculty*
- **PANELIST: ROUNDTABLE DISCUSSION HOSTED BY U.S. DEPARTMENT OF ENERGY** 2021  
Source of Honor: *Nominated by Argonne National Laboratory*
- **LIFETIME ACHIEVEMENT AWARD** 2021  
Source of Award: *VDGOOD Professional Association, INDIA*  
Award: *In Recognition of International Scientist of Engineering, Science and Medicine*
- **VFP FELLOWSHIP, LAWRENCE BERKELEY NATIONAL LABORATORY** 2021  
Source of Honor: *U.S. Department of Energy*
- **VFP FELLOWSHIP, LAWRENCE BERKELEY NATIONAL LABORATORY** 2020  
Source of Honor: *U.S. Department of Energy*
- **VFP FELLOWSHIP, ARGONNE NATIONAL LABORATORY** 2019  
Source of Honor: *U.S. Department of Energy*
- **FACULTY FELLOWSHIP PUBLICATION PROGRAM AWARD (declined)** 2019  
Source of Honor: *The City University of New York*
- **DEPUTY EXECUTIVE DIRECTOR** 2018–19  
Source of Honor: *The City University of New York, Academy for Humanities & Sciences*
- **DISTINGUISHED SCIENTIST AWARD** 2018  
Source of Award: *AMERICAN CHEMICAL SOCIETY (New York Section), USA*  
Award: *For Contributions and Advanced Studies in the Theory of Spin Dynamics in Solid-State Nuclear Magnetic Resonance and Quantum Mechanics*
- **PKAL STEM LEADERSHIP INSTITUTE II, STEM FACULTY LEADER** 2018  
Source of Honor: *Association of American Colleges & Universities*
- **HENRY WASSER AWARD (PHYSICS)** 2017  
Source of Award: *CUNY Academy for Humanities & Sciences*  
Award: *In Recognition of Outstanding Scholarship*
- **BNL PHYSICS DIVERSITY FELLOW** 2017  
Source of Honor: *Brookhaven National Laboratory*
- **ARTICLE, “CHEMICAL PHYSICS, 450, 83 (2015)” HONORED AT THE 70<sup>th</sup> ANNIVERSARY** 2016  
Source of Honor: *Russian Academy of Sciences*
- **“INGENIEUR DE RECHERCHE” NEUROSPIN, CEA-SACLAY, FRANCE** 2009-11  
Source of Honor: *French Alternative Energies and Atomic Energy Commission*
- **ARRHENIUS LABORATORY RESEARCH FELLOW (declined)** 2009  
Source of Honor: *Stockholm University*
- **NATIONAL HIGH MAGNETIC FIELD LABORATORY, Postdoctoral Research Associate 2007-08**  
Source of Honor: *Florida State University, Florida University, & Los Alamos National Laboratory*
- **NSF/ AGEP FELLOW AWARD** 2006  
Source of Honor: *Chancellor of the City University of New York, President of the Graduate Center of CUNY, and NSF/AGEP Project Director of the National Science Foundation*  
Award: *In Recognition of Outstanding Scholarship and Academic Performance*
- **SPECIAL SCHOLARSHIP, GRADUATE STUDY IN NUCLEAR PHYSICS, FRANCE (declined)** 1991  
Source of Award: *Ministry of Higher Education & Government of Cameroon*  
Award: *In Recognition of Outstanding Scholarship and Academic Performance*

## OTHER HONORS & AWARDS

- Organizing Committee Member, 3<sup>rd</sup> Global Summit on 3D Printing & Additive Manufacturing, London, UK 2023
- Organizing Committee Member, 4<sup>th</sup> Global Conference & Expo on Nanoscience and Nanotechnology (ISTNANO) 2023
- Organizing Committee Member, World Congress on Materials Science & Engineering San Francisco, USA 2022
- Organizing Committee Member, 5<sup>th</sup> Global Webinar on Applied Science, Engineering and Technology 2022
- Organizing Committee Member, 2<sup>nd</sup> International Conference NANOMEET 2022, Edinburgh, UK 2022
- Guest Editor: Recent Progress in Materials for the Special Issue entitled “Advanced NMR in Batteries & Fuel Cells” 2021
- Executive Guest Editor for the journal: The Open Biomedical Engineering Journal 2021
- Organizing Committee Member, Global Conference on Physics, Brussels, Belgium 2021
- CUNY – BCC Service Recognition Award 2021
- Nominated for the 2023 SLOAN Research Fellowships – Alfred P. Sloan Foundation 2022

- Board of Directors - at - Large, CUNY Academy for Humanities & Sciences 2018-20
- Organizing Committee Member, 2<sup>nd</sup> European Congress on Chemistry, Amsterdam, Netherlands 2020
- Organizing Committee Member, International Conference on Applied Chemistry, Munich, Germany 2020
- Organizing Committee Member, International Conference on Physics and Networks, Dubai, UAE 2020
- Organizing Committee Member, 4th World Congress on Biotechnology and Healthcare, 2020 San Diego, USA 2020
- Organizing Committee Member, 2<sup>nd</sup> International Conference on Green and Renewable Energy, Vancouver, Canada 2020
- Scientific Board, Physics and Theoretical Chemistry, Luxembourg 2020
- Organizing Committee Member, International Conference on Physics, Rome, Italy 2020
- Organizing Committee Member, 3<sup>rd</sup> International Confer. on Physical and Theoretical Chemistry, Budapest, Hungary 2020
- Organizing Committee Member, Materials Chemistry & Science, Webinar (Tokyo, Japan) 2020
- Expert Advisory Board, Condensed Matter Physics 2020, Miami, USA 2020
- Organizing Committee Member, 3<sup>rd</sup> International Conf. on Semiconductors, Optoelectron. and Nanostructures, Venice 2020
- Organizing Committee Member, Catalysis & Applied Chemical Engineering, Dubai, UAE 2020
- Organizing Committee Member, Applied-Science-2020, Montreal, Canada 2020
- Organizing Committee Member, International Conference on Physics and Networks, Houston, USA 2019
- Honorable Organizing Committee Member, 2<sup>nd</sup> International conf. on Quantum Mechanics & Nuc. Eng., Paris, France 2019
- CUNY William Stewart Travel Award for National and International Conferences 2018
- CUNY ACADEMY for the Humanities & Sciences, FELIKS GROSS Endowment Awards, Award Reviewer 2018
- Organizing Committee Member, Cancer USA 2018
- Nominated for the Academy's FELIKS GROSS Endowment Awards, CUNY Academy for the Humanities & Sciences 2017
- Natural Sciences and Engineering Research Council of CANADA (NSERC), External Grant Reviewer 2017
- Scientific Advisor & Organizing Committee Member, Material Science Meeting 2018, Rome, Italy 2017
- Recipient of the «NEXT BIG THING INQUIRY» Grant 2017
- Best Poster Award, 3rd International Conference on Theoretical & Condensed Matter Physics, USA 2017
- International Conference on Physics, Certificate for Chairing the Session on Physics, in Different Sciences 2016
- Massachusetts Institute of Technology (MIT), FRANCIS BITTER MAGNET LABORATORY  
Scholarship to the 1<sup>ST</sup> U.S. - CANADA Winter School on Bio molecular Solid-State NMR, Stowe 2008
- Postdoctoral Position: Lawrence Berkeley National Lab & University of California BERKELEY (Declined) 2007
- National High Magnetic Field Laboratory, Travel Award to the Rocky Mountain Conference 2007
- NSF/ AGEP- AWARD, The City University of New York, Graduate Center 2005
- Hunter College of CUNY: Awards for Outstanding Academic Performance 2004
- MBRS-RISE/ NIH Scholarship, Hunter College of CUNY 2004
- PSC/CUNY Tuition Award, The Graduate Center of CUNY 2002
- University Fellowship, The City University of New York, Graduate Center 2000
- Laboratory of Fluids Mechanics: Doctoral Program – “ECOLE CENTRALE DE FRANCE” (Declined) 1992
- University Scholarship, The University of Yaoundé, Faculty of Sciences 1987-1992

## **RESEARCH EXPERIENCE**

### **BROOKHAVEN NATIONAL LABORATORY**

06/2022-Present

*SHI (Berkeley) & Department of Energy Visiting Scientist*

- ENERGY & PHOTON SCIENCES DIRECTORATE – High Performance Computing (HPC) Applications Architect ALD's Office, Sustainable Research Pathways for High-Performance Computing (SRP-HPC) program - NWChem, Development of Density Functional Theory (DFT) Capabilities – Applications to Zeolites and Catalysis

### **LAWRENCE BERKELEY NATIONAL LABORATORY**

06/2021-08/2021

*Department of Energy Visiting Faculty*

- BERKELEY LAB - Energy Technologies Area – Energy Storage & Distributed Resources Division: The evolution of Li-ion batteries from the conventional to the advanced to the state-of-the-art to the hybridized - Advanced LIBs

### **LAWRENCE BERKELEY NATIONAL LABORATORY**

06/2020-08/2020

*Department of Energy Visiting Faculty*

- BERKELEY LAB - Energy Technologies Area – Energy Storage & Distributed Resources Division: Investigation of electrochemical and energy storage behavior of systems of high-capacity variants of the spinel LiMn<sub>2</sub>O<sub>4</sub> and disordered rocksalt lithium excess cathode materials for Li-ion batteries

### **ARGONNE NATIONAL LABORATORY**

05/2019-08/2019

*Department of Energy Visiting Faculty*

- Applied Materials Division - MERF: Flame Spray Pyrolysis Synthesis – Solid-State Lithium-ion Battery Materials (Li<sub>7</sub>La<sub>3</sub>Zr<sub>2</sub>O<sub>12</sub> and Li<sub>7</sub>P<sub>2</sub>S<sub>8</sub>I)

### **HARVARD UNIVERSITY (MEDICAL SCHOOL) – MASSACHUSETTS GENERAL HOSPITAL**

2011-2014

*NIH T32 Research Fellow*

- Harvard Medical School & Massachusetts General Hospital, Center for Advanced Medical Imaging Sciences, Department of Radiology, Division of Nuclear Medicine & Molecular Imaging Physics
- Harvard Medical School & Boston Children's Hospital, Department of Radiology and Nuclear Medicine

### **ATOMIC ENERGY COMMISSION & ALTERNATIVE ENERGIES (CEA-SACLAY), FRANCE**

2009-2011

*“Ingenieur de Recherche”*

- INSTITUTE RAYONNEMENT MATIERE SACLAY (IRAMIS): ATOMS, MOLECULES & CONDENSED MATTER
- NEUROSPIN National Research Agency Program (ANR): Diffusion Enhancement of Signal & Resolution (DESIRE)

**NATIONAL HIGH MAGNETIC FIELD LABORATORY (FSU, UF, & LOS ALAMOS), USA** 2007-2008  
*Post-doctoral Research Associate*

- Center for Interdisciplinary Magnetic Resonance (CIMAR)

**CITY UNIVERSITY OF NEW YORK, GRADUATE CENTER** 1999-2007  
*NSF/AGEP - MAGNET Post-doctoral Research Fellow* 2005 – 2007  
*Graduate Research Assistant: City College (Benjamin Levich Institute) & Hunter College* 2001 – 2005

### **SELECTED INVITED VISITS**

- Argonne National Laboratory: DOE Visiting Faculty Program 2019
- Brookhaven National Laboratory: 2017 Electron-Ion-Collider Conference 2017
- American Chemical Society National Offices : Cottrell Scholars Collaborative & New Faculty Workshop 2017
- Schlumberger (Physics Consultant): Al-Khobar, Saudia Arabia 2015
- North Shore – Long Island Jewish Medical Center (NS-LIJ) 2014
- New York University: NMR Program 2011
- Rochester Institute of Technology: Center for Imaging Science in the College of Science 2008
- Harvard University: Harvard Medical School; Martinos Center & MGH; Physics & Biophysics Department 2007
- National High Magnetic Field Laboratory: CIMAR, Tallahassee 2007
- Rensselaer Polytechnic Institute: Department of Physics, Applied Physics & Astronomy 2006

### **UNIVERSITY SERVICES & SYNERGISTIC ACTIVITIES**

- Deputy Chairperson of summer 2022, Department of Engineering, Physics and Technology, BCC-CUNY
- Department Search Committees for Tenure-track faculty: Assistant Professor
- Department Search Committees for Tenure-track faculty: Lecturer
- Department Search Committees for Tenure-track: College Laboratory Technician
- Program Coordinator for Astronomy, Department of Engineering, Physics and Technology, BCC-CUNY
- Reviewer of Research' Posters for the Math and Science Fair, BCC-CUNY, 2020
- Moderator of the 3rd International Conference on Theoretical & Condensed Matter Physics, New York 2017
- Serving on the Experiential-Based Learning Opportunity Committee (EBLO), BCC-CUNY
- Engineering & Physics Department Faculty Representative to the Technology Oversight Committee (TOC)
- Summer 2017 Advisement & Registration, BCC-CUNY
- Advisory in the STEM (Science, Technology, Engineering, & Mathematics) Fields
- Engineering & Physics Department Faculty Representative to the Committee on Academic Standing, BCC-CUNY
- Serving on the BCC COLLEGE SENATE Committee (Alternate), The City University of New York
- Serving on the Department Personnel & Budget Committee (Alternate), BCC-CUNY
- Faculty of the Doctorate Programs of Physics & Chemistry at the Graduate Center, CUNY (2015-Present)
- Serving on the Curriculum Committee (Alternate), BCC-The City University of New York
- Serving on several Sub-Committees on Academic Standing, BCC- The City University of New York
- Designed the Curriculum Development on Fuel Cells for "College Now", Center of Sustainable Energy (Summer 2016)
- Chair of the Sessions on Quantum Physics, Chemical Physics, & Physics in Different Sciences at the International Conference on Physics, New Orleans, LA June 2016
- Co-coordinator of the monthly MAGNET round table with underrepresented students for academic discussions, mentoring, & peer-support, OEODP, The Graduate Center - CUNY (Sept. 2005 – August 2007)

### **SELECTED PEER-REVIEW & JOURNALS REVIEWED**

- Reviewer of Grants for the National Science Foundation (NSF)
- Reviewer for proposals of the 2021 Association of American Colleges & Universities (AAC&U) Transforming STEM Higher Education Conference
- External Grant Reviewer for Natural Sciences & Engineering Research Council of CANADA (NSERC)
- The Journal of Chemical Physics - AIP
- Journal of Applied Physics – AIP
- Review of Scientific Instruments - AIP
- Heliyon - Elsevier
- Applied Mathematics and Computation - Elsevier
- Solid-State Nuclear Magnetic Resonance (SSNMR) – Elsevier
- International Journal of Modern Physics B – World Scientific
- Journal of Nonlinear Science, Springer-Verlag Publishing
- International Journal of Modern Physics and Application
- Journal of Modern Physics
- International Journal of Nanomaterials, Nanotechnology & Nanomedicine
- International Journal of Radiology and Radiation Oncology
- Frontiers in Biomedical Sciences, American Association for Science & Technology
- British Journal of Mathematics & Computer Science
- Bentham Science Publishers: Book Title: Advanced Physical Chemistry Practical
- Reviewer Board of the International Journal of Radiology & Radiation Oncology

- Imaging Journal of Clinical & Medical Sciences
- International Conference of Numerical Analysis & Applied Mathematics
- AshEse Journal of Physical Science
- Journal of Basic & Applied Research International
- Journal of Applied Physical Science International

## **EDITORIAL SERVICES**

- Review Editor and Editorial Board Member, *Frontiers in Materials – Energy Materials*
- Chief Editor, *Editorial Board of The Scientific Journal of Molecular Physics*
- Editor-in-Chief, *Journal of Molecular Physics*
- Editor-in-Chief, *Drug Design Development and Delivery Journal*
- Honorable Editor and Editorial Board Member, *International Journal of Nuclear Medicine & Radioactive Substances*
- Guest Editor, *Special Issue: Advanced Nuclear Magnetic Resonance in Batteries and Fuel Cells Research*
- Esteemed Editorial Board Member, *Applied Physics Current Research*
- Founder & Editor-in-Chief, *Journal of Drug Design and Discovery Research*
- Physics Advisory Board Member, *Heliyon-Elsevier*
- Editorial Board Member, *Heliyon-Elsevier*
- Editorial Board Member, *American Research Journal of Nanotechnology*
- Editorial Board Member, *International Journal of Materials and Nano Sciences*
- Editorial Board Member, *Peer Reviewed Academia Sciences*
- Editorial Board Member, *Journal of Atomic and Nuclear Physics*
- Editorial Board Member, *Madridge Journal of Nanotechnology & Nanoscience*
- Editorial Board Member, *Advances in Materials Science & Engineering*
- Editorial Board Member, *Advances in Theoretical & Computational Physics*
- Editorial Board Member, *Journal of Nano science-technology research and innovations*
- Editorial Board Member, *Physical Science & Biophysics Journal*
- Editorial Board Member, *Advances in Bioengineering and Biomedical Science Research*
- Editorial Board Member, *Archives of Nano medicine: Open Access Journal*
- Editorial Board Member, *European Journal of Clinical Oncology*
- Editorial Board Member, *The Scientific Pages of Molecular Physics*
- Editorial Board Member, *International Journal of Magnetism & Electromagnetics*
- Editorial Board Member, *International Journal of Nanomaterials, Nanotechnology & Nanomedicine*
- Editorial Board Member, *International Journal of Magnetism and Nuclear Science*
- Editorial Board Member, *Scientific Federation Journal of Nuclear Science*
- Editorial Board Member, *Global Scientific Research Journals*
- Nuclear Medicine Editorial Board, *The Clinics in Oncology*
- Advisory Board Member, *Nuclear Medicine & Biomedical Imaging*
- Guest Reviewer, *Journal of Modern Physics*
- Guest Reviewer, *Natural Sciences*
- Referee, *Journal of Advances in Physics*
- Editorial Board Member, *SM Radiology Journal*
- Editorial Board Member, *Medical Imaging Research*
- Editorial Board Member, *Journal of Nuclear Medicine and Radiation Therapy*
- Editorial Board Member, *Journal of Radiation & Nuclear Medicine*
- Editorial Board Member, *Journal of Archives of Surgical Oncology*
- Editorial Board Member, *Annals of Clinical Radiology*
- Editorial Board Member, *Trends in Internal Medicine*
- Reviewer Board, *International Journal of Radiology & Radiation Oncology*
- Reviewer Board, *Imaging Journal of Clinical & Medical Sciences*
- Editorial Board Member, *Cancers & Advanced Therapies*
- Editorial Board Member, *Drug Design Development & Delivery Journal*
- Editorial Board Member, *Journal of Imaging Science*
- Editorial Board Member, *Radiation Oncology Leaflets-Remedy Open Access*
- Editorial Board Member, *Cancer Research & Reports*
- Member, *American Association for Science & Technology*

## **GRANTS & AWARDS**

- **2022 JUNIOR FACULTY RESEARCH AWARD IN SCIENCE AND ENGINEERING** 2022–2023  
Award # 7V603-47-02, Amount = \$50,000  
Source of Support: Alfred P. Sloan Foundation  
Title: “Novel advanced approaches to characterize recent cathode and electrolyte materials in LIBs and beyond”
- **PSC-CUNY RESEARCH AWARD** 2022–2023  
Award # 64382-00 53, Amount = \$6,000  
Source of Support: CUNY Research Foundation

- Title: “*Mechanistic Understanding at the Atomic Scale of Structure-Composition-Property Relationships*”
- **CUNY RESEARCH SCHOLAR PROGRAM** 2022–2023  
BCC CRSP Award, Amount = \$3,000  
Source of Support: *The City University of New York Office of Research*  
Title: “*Simulation of solid-state nuclear magnetic resonance experiments using SPINEVOLUTION software*”
  - **SUSTAINABLE RESEARCH PATHWAYS FOR HIGH-PERFORMANCE COMPUTING SUMMER 2022**  
Total Award Amount = \$25,300  
Source of Support: *Sustainable Horizons Institute & Department of Energy/ Brookhaven National Laboratory*  
Title: *NWChemEx capability assessment*
  - **VISITING FACULTY PROGRAM** SUMMER 2021  
Total Award Amount = \$22,000  
Source of Support: *Department of Energy/ Lawrence Berkeley National Laboratory*  
Title: *The Evolution of Li-ion Batteries from the Conventional to the Advanced to the State-of-the-Art to the Hybridized*
  - **CUNY RESEARCH SCHOLAR PROGRAM** 2021–2022  
BCC CRSP Award, Amount = \$3,000  
Source of Support: *The City University of New York Office of Research*  
Title: “*Simulation of solid-state nuclear magnetic resonance experiments to investigate lithium-ion battery materials*”
  - **PSC-CUNY RESEARCH AWARD** 2021–2022  
Award # 64382-00 52, Amount = \$6,000  
Source of Support: *CUNY Research Foundation*  
Title: “*Advanced solid-state NMR technique to characterize two superionic conductors, Li<sub>7</sub>P<sub>2</sub>S<sub>8</sub>I and Li<sub>7</sub>La<sub>3</sub>Zr<sub>2</sub>O<sub>12</sub> for Li-Ion battery materials*”
  - **THE LOUIS STOKES ALLIANCE FOR MINORITY PARTICIPATION** 2021–2022  
BCC LSAMP Program, Source of Support: *NSF/BCC-CUNY*  
Title: “*Spin Dynamics and Simulation of Solid-State NMR Experiment Using SIMPSON Software*”
  - **CUNY RESEARCH SCHOLAR PROGRAM** 2020–2021  
BCC CRSP Award, Amount = \$2,400  
Source of Support: *CUNY Research Foundation Office of Research*  
Title: “*Simulation and theory of solid-state NMR and investigation of lithium-ion battery materials electrodes*”
  - **THE LOUIS STOKES ALLIANCE FOR MINORITY PARTICIPATION** 2020–2021  
BCC LSAMP Program, Source of Support: *NSF/BCC-CUNY*  
Title: “*Simulation of Solid-State Nuclear Magnetic Resonance Experiments Using SIMPSON Software*”
  - **THE LOUIS STOKES ALLIANCE FOR MINORITY PARTICIPATION** 2020–2021  
BCC LSAMP Program  
Source of Support: *NSF/BCC-CUNY*  
Title: “*Spin Dynamics and Simulation of Solid-State NMR Experiments Using SIMPSON Software*”
  - **VISITING FACULTY PROGRAM** SUMMER 2020  
Total Award Amount = \$22,000  
Source of Support: *Department of Energy/ Lawrence Berkeley National Laboratory*  
Title: *Investigation of electrochemical and energy storage behavior of systems of high-capacity variants of the spinel LiMn<sub>2</sub>O<sub>4</sub> and disordered rock salt lithium excess cathode materials for Li-ion batteries*
  - **PSC-CUNY RESEARCH AWARD** 2019–2020  
Award # 62654-00 50, Amount = \$6,000  
Source of Support: *CUNY Research Foundation*  
Title: “*Molecular-level structures of lithium battery materials measured by solid-state 6,7Li dipolar-recoupling*”
  - **FACULTY MENTOR: NATIONAL SCIENCE FOUNDATION S-STEM SCHOLARSHIP** 2018-2023  
Award # 1833852, Amount = \$5 MILLION  
Source of Support: *NSF*  
Title: “*Developing a Growth Mindset Model to Build Resiliency in Underrepresented STEM Students*”
  - **RESEARCH GRANT OF THE CITY UNIVERSITY OF NEW YORK** 2018-2019  
CCRG Award # 1517, Amount = \$10,000  
Source of Support: *CUNY Research Foundation*  
Title: “*Comparison between Floquet-Magnus expansion and Fer expansion approaches in solid-state nuclear magnetic resonance spectroscopy*”
  - **CUNY RESEARCH SCHOLAR PROGRAM** 2018–2019  
BCC CRSP Award Amount = \$2,400  
Source of Support: *The City University of New York Office of Research*  
Title: *Theory and simulation in solid-state nuclear magnetic resonance spectroscopy and its application*
  - **VISITING FACULTY PROGRAM** SUMMER 2019  
Total Award Amount = \$18,000  
Source of Support: *Department of Energy/ Argonne National Laboratory*  
Title: *Application of Continuous Flow Reactors to Advance Synthesis: Powerful tools to Understand Processes at the Atomic Level and advance manufacturing of fine chemicals and nanosized materials*
  - **BCC OFFICE OF ACADEMIC AFFAIRS GRANTS** 2018  
Award Amount = \$500/ Source of Support: *Bronx Community College of CUNY*  
Title: *Using the Floquet-Magnus and the Fer Expansion Approaches to Control the Spin Dynamics in Solid-State Nuclear Magnetic Resonance and Beyond*

- **CUNY WILLIAM STEWART TRAVEL AWARD FOR NATIONAL AND INTERNATIONAL CONFERENCES** 2018  
Award Amount = \$360 / Source of Support: CUNY Academy for Humanities & Sciences
- **CUNY RESEARCH SCHOLAR PROGRAM** 2017–2018  
BCC CRSP Award Amount = \$2,400  
Source of Support: The City University of New York Office of Research  
Title: Theory and simulation of solid state nuclear magnetic resonance spectroscopy and its applications
- **HENRY WASSER AWARD** 2017  
Award Amount = \$750  
Source of Support: CUNY Academy for Humanities and Sciences
- **THE NEXT BIG THING INQUIRY GRANT** 2017  
Award Amount = \$500  
Source of Support: Bronx Community College of CUNY  
Title: Advisory in the STEM Fields
- **BCC FOUNDATION FACULTY SCHOLARSHIP SUPPORT GRANTS** 2017  
BCCF Award Amount = \$500  
Source of Support: Bronx Community College of CUNY  
Title: Spin Dynamics in Solid-State Nuclear Magnetic Resonance and Beyond
- **CUNY RESEARCH SCHOLAR PROGRAM** 2016-2017  
BCC CRSP Award Amount = \$1,000  
Source of Support: The City University of New York Office of Research  
Title: Theory and simulation of NMR experiments to investigate fuel cell electrolytes for energy applications
- **BCC FOUNDATION FACULTY SCHOLARSHIP SUPPORT GRANTS** 2016  
BCCF Award Amount = \$500  
Source of Support: Bronx Community College of CUNY  
Title: On Fe expansion and its application in solid-state nuclear magnetic resonance and physics
- **CUNY RESEARCH SCHOLAR PROGRAM** 2015–2016  
BCC CRSP Award Amount = \$1,000  
Source of Support: The City University of New York Office of Research  
Title: Theory and simulations of NMR experiments to investigate fuel cell electrolytes for energy applications

#### **CURRENTLY FUNDED PROJECTS:**

- **2022 JUNIOR FACULTY RESEARCH AWARD IN SCIENCE AND ENGINEERING** 2022–2023  
Award # 7V603-47-02, Amount = \$50,000  
Source of Support: Alfred P. Sloan Foundation  
Title: “Novel advanced approaches to characterize recent cathode and electrolyte materials in LIBs and beyond”
- **PSC-CUNY RESEARCH AWARD** 2022–2023  
Award # 64382-00 53, Amount = \$6,000  
Source of Support: CUNY Research Foundation  
Title: “Mechanistic Understanding at the Atomic Scale of Structure-Composition-Property Relationships”
- **CUNY RESEARCH SCHOLAR PROGRAM** 2022–2023  
BCC CRSP Award, Amount = \$3,000  
Source of Support: The City University of New York Office of Research  
Title: “Simulation of solid-state nuclear magnetic resonance experiments using SPINEVOLUTION software”

#### **PENDING PROPOSALS:**

- **Proposal/Award # (if available)**: NSF 22-605 / Division of Chemistry: Disciplinary Research Programs (CHE-DRP).  
Amount = \$495,951  
Source of Support: National Science Foundation  
Title: Mechanistic Understanding at the Atomic Scale of Diffusion and Structure-Composition-Property Relationships in Superionic Sulfide Solid Electrolyte for Lithium-Based Batteries
- **Proposal/Award # (if available)**: Sloan Research Fellowships 2023.  
Amount = \$75,000  
Title: Solid-state NMR and Density Functional Theory for Mechanistic Simulations of Catalysts  
Source of Support: Alfred P. Sloan Foundation
- **Proposal/Award # (if available)**: Harvard Radcliffe Fellowship 2023-2024  
Amount = \$78,000  
Title: Understanding Mechanistic Simulations of H-ZSM-5 Zeolite Catalyst with NWChem and Density Functional Theory  
Source of Support: Radcliffe Institute for Advanced Study
- **Proposal/Award # (if available)**: PSC-CUNY Research Award 2023  
Amount = \$6,000  
Source of Support: CUNY Research Foundation  
Title: Computing NMR properties for ZSM-5 Zeolite Catalyst using Density Functional Theory

#### **PLANNED PROPOSALS:**

- **Proposal/Award # (if available)**: NSF 22-605 / Division of Chemistry: Disciplinary Research Programs (CHE-DRP).  
Title: Development of new pulse sequences in solid-state NMR for controlling spin dynamics and studying ion dynamics in solid electrolytes. Source of Support: National Science Foundation

- **Proposal/Award # (if available):** NSF 22-609 / Division of Materials Research: Topical Materials Research Programs (DMR-TMRP). **Title:** Investigation of Dehydrogenation of 2-Propanol Using NWChem. **Source of Support:** National Science Foundation
- **Proposal/Award # (if available):** Inclusive Energy Innovation Prize 2023. **Title:** Organic Scintillating Compounds for Neutrino Detectors. **Source of Support:** U.S. Department of Energy
- **Proposal/Award # (if available):** The Advanced Science Research Center (ASRC) Seed Grant Program 2023. **Title:** Theoretical Calculation and Simulation to Design, Develop, and Optimize Sophisticated New Pulse Sequences in Advanced Solid-State NMR. **Source of Support:** CUNY Research Foundation Fund
- **Proposal/Award # (if available):** Black, Race, and Ethnic Studies Initiative (BRESI # 2), Black, Race, and Ethnic Studies Mentored Student Research.  
**Title:** “Simulation of Pulse Sequences in Solid-State NMR for Structural Studies in Novel Superionic Electrolyte Materials of Lithium-Ion Batteries.” **Amount** = \$12,000. **Source of Support:** Mellon Foundation
- **Proposal/Award # (if available):** Black, Race, and Ethnic Studies Initiative (BRESI # 8), Faculty Research Grants for Community Colleges.  
**Title:** “Control and Simulation of Spin Dynamics in Solid-State NMR to Investigate LIB Electrolyte materials”  
**Amount** = \$50,000. **Source of Support:** Mellon Foundation

## SCIENTIFIC COLLABORATIONS

- Dr. Hubertus van Dam, Computational Science Initiative, Brookhaven National Laboratory
- Dr. Thibault Charpentier, CEA-Saclay, CNRS, NIMBE UMR 3685, Université Paris-Saclay, France
- Dr. Vincent Battaglia, Energy Storage & Distributed Resources Division, Lawrence Berkeley National Laboratory
- Dr. Yanbao Fu, Energy Storage & Distributed Resources Division, Lawrence Berkeley National Laboratory
- Dr. Robert Messinger, Grove School of Engineering, CUNY Energy Institute, City College of New York, USA
- Dr. Krzysztof Z. Papek, Applied Materials Division, Argonne National Laboratory
- Dr. Bingwen Hu, Shanghai Key Laboratory of Magnetic Resonance, East China Normal University, China
- Dr. Arkadiusz Sitek, Harvard University and Massachusetts General Hospital, USA

## SELECTED FEATURED WORK & HIGHLIGHT

- <https://advanceseng.com/emerging-expansion-schemes-nmr-field/>
- Eugene Stephane Mananga (0000-0002-0302-8231) (orcid.org)
- <https://www.anl.gov/article/driving-stem-advancements-and-discoveries-through-cuttingedge-technology-and-collaboration?fbclid=IwAR1qw5gRVnGifdvnWCZXaSvkmR9eQY5r1EIQDAsBPUf3u2S8RmbHBiV55nI>
- <https://scholar.google.com/citations?user=3ILUmUAAAAJ&hl=en>
- <https://www.lidsen.com/journals/rpm/rpm-special-issues/nuclear-magnetic-resonance>
- [https://www.shinstitute.org/opening-doors-and-transforming-science-through-srp/?utm\\_source=main+list&utm\\_campaign=1981451841-email\\_campaign\\_2022\\_10\\_12\\_06\\_19&utm\\_medium=email&utm\\_term=0\\_b6d58a78f5-1981451841-614575325](https://www.shinstitute.org/opening-doors-and-transforming-science-through-srp/?utm_source=main+list&utm_campaign=1981451841-email_campaign_2022_10_12_06_19&utm_medium=email&utm_term=0_b6d58a78f5-1981451841-614575325)

## H-INDEX

- h-index = 15

## LIST OF TOP FIVE PAPERS

39. Eugene S. Mananga and T. Charpentier, “Introduction of the Floquet-Magnus Expansion in Solid-State Nuclear Magnetic Resonance Spectroscopy,” *The Journal of Chemical Physics*, *J. Chem. Phys.* 135, 044109, (2011). doi.org/10.1063/1.3610943 (Peer-review)  
Number of citations: 81
65. Eugene S. Mananga, "Application of Floquet-Magnus and Fer expansion approaches during Spin-Locking radiation in Solid-State NMR," *Chemical Physics Letters*, *Chem. Phys. Lett.* 730, 153-164, (2019). doi.org/10.1016/j.cplett.2019.05.054 (Peer-review)  
Number of citations: 1
35. Eugene S. Mananga, Y. Rumala, and G. S. Boutis, “Finite Pulse Width Artifact Suppression in Spin-1 Quadrupolar Echo Spectra by Phase Cycling,” *Journal of Magnetic Resonance*, *J. Magn. Reson.* 181, 296-303, (2006). doi: 10.1016/j.jmr.2006.05.015 (Peer-review)  
Number of citations: 31
40. Eugene S. Mananga, A. E. Reid and T. Charpentier, “Efficient Theory of Dipolar Recoupling in Solid-State NMR of Rotating Solids Using Floquet–Magnus Expansion: Application on BABA and C7 Radio Frequency Pulse Sequences,” *Solid State Nuclear Magnetic Resonance*, *Solid State Nucl. Magn. Reson.* 41, 32-47, (2012). (Peer-review)  
doi: 10.1016/j.ssnmr.2011.11.004  
Number of citations: 23
32. J. R. P. Jayakody, P. E. Stallworth, Eugene S. Mananga, J. Farrington-Zapata, and S. G. Greenbaum, “High Pressure NMR Study of Water Self-Diffusion in NAFION- 117 Membrane,” (Peer-review)  
*Journal of Physical Chemistry B*, *J. Phys. Chem. B*, 108, 4260-4262, (2004). <https://doi.org/10.1021/jp037621+>  
Number of citations: 53

## LIST OF TOP FIVE CITED PAPERS

39. Eugene S. Mananga and T. Charpentier, “Introduction of the Floquet-Magnus Expansion in Solid-State Nuclear Magnetic Resonance Spectroscopy,” *The Journal of Chemical Physics*, *J. Chem. Phys.* 135, 044109, (2011). doi.org/10.1063/1.3610943 (Peer-review)  
Number of citations: 81



53. Xiaoshi Hu, X. Lou, Chao Li, Y. Ning, Y. Liao, Qun Chen, **Eugene S. Mananga**, Ming Shen and Bingwen Hu, "Facile synthesis of the Basolite F300-like Nanoscale Fe-BTC Framework and its Lithium Storage Properties," (*Peer-review*) *Royal Society of Chemistry Advances, RSC Advances* 6, 114483-114490, (2016). doi.org/10.1039/C6RA22738D  
Number of citations: 65
32. J. R. P. Jayakody, P. E. Stallworth, **Eugene S. Mananga**, J. Farrington-Zapata, and S. G. Greenbaum, "High Pressure NMR Study of Water Self-Diffusion in NAFION- 117 Membrane," (*Peer-review*) *Journal of Physical Chemistry B, J. Phys. Chem. B*, 108, 4260-4262, (2004). https://doi.org/10.1021/jp037621+  
Number of citations: 53
33. J. R. P. Jayakody, A. Khalfan, **Eugene S. Mananga**, S. G. Greenbaum, T. D. Dang, R. Mantz, "NMR Investigation of Water and Methanol Transport in Sulfonated Polyareyleneethioethersulfones for Fuel Cell Applications," (*Peer-review*) *Journal of Power Sources, J. Power Sources*, 156, 195-199, (2006). doi.org/10.1016/j.jpowsour.2005.05.056  
Number of citations: 36
35. **Eugene S. Mananga**, Y. Rumala, and G. S. Boutis, "Finite Pulse Width Artifact Suppression in Spin-1 Quadrupolar Echo Spectra by Phase Cycling," (*Peer-review*) *Journal of Magnetic Resonance, J. Magn. Reson.* 181, 296-303, (2006). doi: 10.1016/j.jmr.2006.05.015  
Number of citations: 31

### LIST OF ALL SCIENTIFIC PUBLICATIONS IN REVISION

78. **Eugene S. Mananga**, Vincent Battaglia, Yanbao Fu, and Robert Kostecki, "The Last 30 Years of Diagnostic Studies of the Different Techniques in Li-Ion Batteries and Beyond", Part A, *in Preparation*
77. **Eugene S. Mananga**, Vincent Battaglia, Yanbao Fu, and Robert Kostecki, "The Last 30 Years of Diagnostic Studies of the Different Techniques in Li-Ion Batteries and Beyond", Part B, *in Preparation*
76. **Eugene S. Mananga**, "The Floquet-Magnus and Fer Expansions Applied to Control the Spin Dynamics under the chemical shielding Hamiltonian during the TOFU experiment in SSNMR" *in Preparation*
75. **Eugene S. Mananga**, "The Floquet-Magnus and Fer Expansions: Application to Control the Spin Dynamics under the Dipolar Coupling Hamiltonian During the TOFU experiment in NMR" *in Preparation*
74. **Eugene S. Mananga**, "Comparison between Floquet-Magnus and Fer expansion approaches during TPPM radiation in Solid-State Nuclear Magnetic Resonance," *in Preparation*
73. **Eugene S. Mananga**, "Application of Floquet-Magnus Expansion During the Phase Modulated Lee-Goldburg Radiation in Solid State NMR," *in Preparation*
72. **Eugene Mananga**, "Using the Floquet-Magnus and Fer expansion approaches to investigate the spin dynamics during the XiX radiation in Solid-State NMR," *in Preparation*
71. **Eugene S. Mananga**, "The Floquet-Magnus and Fer Expansions: Application to Control the Spin Dynamics During the Phase Modulated Lee-Goldburg Radiation in Solid-State NMR" *in Preparation*

### LIST OF ALL SCIENTIFIC PUBLICATIONS

70. **Eugene S. Mananga**, E. Lopez, A. Diop, P. J. T. Dongomale, F. Diane, "The Impact of the Air Pollution on Health in New York City," in revision (2022). (*Peer-review*)
69. **Eugene S. Mananga** and Thibault Charpentier, "Applications of Floquet-Magnus and Fer expansion approaches during Cross Polarization radiation in Solid-State NMR," *Accepted Journal of Modern Physics (JMP)* (2022). (*Peer-review*)
68. **Eugene S. Mananga**, "Lithium-ion Battery and the Future," *Recent Progress in Materials*, 3(2), (2021). doi:10.21926/rpm.2101012 (*Peer-review*)
67. **Eugene S. Mananga** and Lamisa Rasmeha, "Impact of the Coronavirus Pandemic on the Education and School System at a Large School in the Nations' Least Affluent Congressional District and Around the World," *OBM Integrative and Complementary Medicine*, 6 (2), (2021). doi:10.21926/obm.icm.2102012 (*Peer-review*)
66. **Eugene S. Mananga** and Lamisa Rasmeha, "Comparison between the 2020 Coronavirus-19 and the 1665 Great Plague of London," *Annals of Public Health Reports*, 5 (2), 216-223, (2021). doi: 10.36959/856/521 (*Peer-review*)
65. **Eugene S. Mananga**, "Application of Floquet-Magnus and Fer expansion approaches during Spin-Locking radiation in Solid-State NMR," *Chemical Physics Letters, Chem. Phys. Lett.* 730, 153-164, (2019). doi.org/10.1016/j.cplett.2019.05.054 (*Peer-review*)
64. **Eugene S. Mananga**, "Applications of Floquet-Magnus and Fer expansion approaches on Rotary-Resonance Recoupling sequence in Solid-State NMR," (*Peer-review*) *International Journal of Modern Physics B*, 33 (24), 1950278, (2019). doi.org/10.1142/S0217979219502783

63. **Eugene S. Mananga** and Thibault Charpentier, "Revisiting the applications of Floquet-Magnus and Fer expansion approaches in Physics and solid-state NMR," (Peer-review) *International Journal of Modern Physics B*, 32 (22), 1850236, (2018). doi.org/10.1142/S0217979218502363
62. **Eugene S. Mananga**, "Theoretical Perspectives of Spin Dynamics in Solid-State Nuclear Magnetic Resonance and Physics," *Journal of Modern Physics*, 9, 1645-1659, (2018). doi: 10.4236/jmp.2018.98103 (Peer-review)
61. **Eugene S. Mananga**, "Investigation of timing effects in modified composite quadrupolar echo pulse sequences by mean of average Hamiltonian theory," *Physica B: Condensed Matter*, 528, 47-59, (2018). doi.org/10.1016/j.physb.2017.10.087 (Peer-review)
60. **Eugene S. Mananga**, "Historical Developments in Physical Chemistry," *Physical Chemistry: An Indian Journal, Phys. Chem. Ind. J.* 12 (3): 115 (2017). (Letter to the Editor)
59. **Eugene S. Mananga**, "Alternative Directions to Control Spin Dynamics in NMR and Physics," (Peer-review) *International Journal of Atomic and Nuclear Physics, Int. J. At. Nucl. Phys.*, 2:005, (2017). doi:10.35840/2631-5017/2505
58. **Eugene S. Mananga**, "On the Equivalence of the Floquet-Magnus and Fer Expansions to Investigate the Dynamics of a Spin System in the Three-Level System," (Peer-review) *The Journal of Physical Chemistry A, J. Phys. Chem. A*, 121, 6063-6078 (2017). doi.org/10.1021/acs.jpca.7b01723
57. **Eugene S. Mananga**, "Efficient numerical integrator based on Fer expansion: Application to solid-state NMR experiments and to solve quantum Liouville equation and quantum Fokker-Planck equation," *Journal of Advances in Physics, J. Adv. Phys.* 13 (4), 4799-4803 (2017). doi.org/10.24297/jap.v13i4.6011 (Peer-review)
56. **Eugene S. Mananga** and Bingwen Hu, "Controlling the dynamics of quadrupolar spin-1 nuclei by mean of average Hamiltonian theory when irradiated with composite pulse sequences," (Peer-review) *The Journal of Physical Chemistry A, J. Phys. Chem. A*, 120 (43), 8657-8679, (2016). doi.org/10.1021/acs.jpca.6b06595
55. **Eugene S. Mananga**, "On the Fer Expansion: Applications in Solid-State NMR and Physics," (Peer-review) *Physics Reports, Phys. Rep.* 608, 1-41, (2016). doi.org/10.1016/j.physrep.2015.10.006
54. **Eugene S. Mananga** and Thibault Charpentier, "On the Floquet - Magnus Expansion: Applications in Solid-State Nuclear Magnetic Resonance and Physics," (Peer-review) *Physics Reports, Phys. Rep.* 609, 1-49, (2016). doi.org/10.1016/j.physrep.2015.10.005
33. Xiaoshi Hu, X. Lou, Chao Li, Y. Ning, Y. Liao, Qun Chen, **Eugene S. Mananga**, Ming Shen and Bingwen Hu, "Facile synthesis of the Basolite F300-like Nanoscale Fe-BTC Framework and its Lithium Storage Properties," (Peer-review) *Royal Society of Chemistry Advances, RSC Advances* 6, 114483-114490, (2016). doi.org/10.1039/C6RA22738D
52. **Eugene S. Mananga**, J. Moghaddasi, A. Sana, A. Akinmoladun, and M. Sadoqi "Advances in Theory of Solid-State NMR," *Journal of Nature and Science, J. Nat. Sci.* 1, 6, e109, (2015). PMID: 26878063; PMCID: PMC4750054 (Peer-review)
51. M. Shen, R. Roopchand, **Eugene S. Mananga**, Jean-Paul Amoureux, Q. Chen, G. Boutis, B. Hu, "Revisiting NMR composite pulses for broadband <sup>2</sup>H excitation," *Solid-State Nuclear Magnetic Resonance*, 66-67, 45, (2015). doi: 10.1016/j.ssnmr.2014.12.004 (Peer-review)
50. **Eugene S. Mananga** and Thibault Charpentier, "Floquet-Magnus expansion for general N-coupled spins systems in magic-angle spinning NMR Spectra," *Chemical Physics, Chem. Phys.* 450-451, 83-90, (2015). doi.org/10.1016/j.chemphys.2015.02.006 (Peer-review)
49. **Eugene S. Mananga**, J. Moghaddasi, A. Sana, and M. Sadoqi, "Theories in spin dynamics of solid-state NMR spectroscopy," (Peer-review) *World Journal of Nuclear Science and Technology, WJNST* 5, 27-42, (2015). doi: 10.4236/wjnst.2015.51004
48. **Eugene S. Mananga**, "Theoretical Approaches to control spin dynamics in solid-state NMR," (Peer-review) *Journal of Chemical Sciences, J. Chem. Sci.* 127 (12), 2081-2109, (2015). doi 10.1007/s12039-015-0977-9
47. M. Shen, R. Roopchand, **Eugene S. Mananga**, J.-P Amoureux, Q. Chen, G. Boutis, B. Hu, "Theoretical calculation of a composite pulse with 8-Step Phase Cycling for <sup>2</sup>H broadband excitation by average Hamiltonian theory," (Peer-review) *Chinese Journal of Magnetic Resonance, Chinese J. Magn. Reson.* 32 (2), (2015). doi: 10.11938/cjmr20150219
46. **Eugene S. Mananga**, "Two theoretical approaches in solid-state nuclear magnetic resonance spectroscopy," *Journal of Modern Physics*, 5, 458-463, (2014). doi: 10.4236/jmp.2014.56055 (Peer-review)
45. **Eugene S. Mananga**, "Future theoretical Approaches in Nuclear Magnetic Resonance," *Journal of Modern Physics*, 5, 145-148, (2014). doi: 10.4236/jmp.2014.54024 (Peer-review)
44. **Eugene S. Mananga**, "Applications of Floquet-Magnus Expansion, Average Hamiltonian Theory and Fer Expansion to Study Interactions in SSSNMR when Irradiated with the Magic-Echo Sequence," doi.org/10.1016/j.ssnmr.2013.08.002

*Solid-State Nuclear Magnetic Resonance, Solid State Nucl. Magn. Reson.* 55-56, 54-62, (2013). (Peer-review)

43. Eugene S. Mananga, "Criteria to average out the chemical shift anisotropy in solid-state NMR when irradiated with BABA I, BABA II, and C7 radiofrequency pulse sequences," [doi.org/10.1016/j.ssnmr.2013.08.003](https://doi.org/10.1016/j.ssnmr.2013.08.003)  
*Solid-State Nuclear Magnetic Resonance, Solid State Nucl. Magn. Reson.* 55-56, 63-72 (2013). (Peer-review)
42. Eugene S. Mananga, "Progress in Spin Dynamics Solid-State Nuclear Magnetic Resonance with the Application of Floquet-Magnus Expansion to Chemical Shift Anisotropy," [doi.org/10.1016/j.ssnmr.2013.04.001](https://doi.org/10.1016/j.ssnmr.2013.04.001)  
*Solid State Nuclear Magnetic Resonance, Solid State Nucl. Magn. Reson.* 54, 1-7, (2013). (Peer-review)
41. Eugene S. Mananga, A. E. Reid, "Investigation of the Effect of Finite Pulse Errors on BABA Pulse Sequence Using Floquet-Magnus Expansion Approach,"  
*Molecular Physics, Mol. Phys.* 111, 2, 243-257, (2013). [doi: 10.1080/00268976.2012.718379](https://doi.org/10.1080/00268976.2012.718379) (Peer-review)
40. Eugene S. Mananga, A. E. Reid and T. Charpentier, "Efficient Theory of Dipolar Recoupling in Solid-State NMR of Rotating Solids Using Floquet-Magnus Expansion: Application on BABA and C7 Radio Frequency Pulse Sequences,"  
*Solid State Nuclear Magnetic Resonance, Solid State Nucl. Magn. Reson.* 41, 32-47, (2012). (Peer-review)  
[doi: 10.1016/j.ssnmr.2011.11.004](https://doi.org/10.1016/j.ssnmr.2011.11.004)
39. Eugene S. Mananga and T. Charpentier, "Introduction of the Floquet-Magnus Expansion in Solid-State Nuclear Magnetic Resonance Spectroscopy,"  
*The Journal of Chemical Physics, J. Chem. Phys.* 135, 044109, (2011). [doi.org/10.1063/1.3610943](https://doi.org/10.1063/1.3610943) (Peer-review)
38. Eugene S. Mananga, C. D. Hsu, S. Ishmael, T. Islam, and G. S. Boutis, "Probing the Validity of Average Hamiltonian Theory for Spin I=1, 3/2 and 5/2 Nuclei by Analyzing a Simple Two Pulse Sequence,"  
*Journal of Magnetic Resonance, J. Magn. Reson.* 193, 10-22, (2008). [doi: 10.1016/j.jmr.2008.03.014](https://doi.org/10.1016/j.jmr.2008.03.014) (Peer-review)
37. G. S. Boutis, C. Renner, T. Isahkarov, T. Islam, L. Kannangara, P. Kaur, Eugene S. Mananga, A. Ntekim, Y. S. Rumala, and D. Wei "High Resolution Q-Space Imaging Studies of Water in Elastin,"  
*Biopolymers, Biopolymers*, 87, 352-9, (2007), [doi: 10.1002/bip.20838](https://doi.org/10.1002/bip.20838) (Peer-review)
36. Eugene S. Mananga, R. Roopchand, Y. S. Rumala, and G. S. Boutis, "On The Application of Magic Echo Cycles For Quadrupolar Echo Spectros of Spin-1,"  
*Journal of Magnetic Resonance, J. Magn. Reson.* 185, 28-37, (2007). [doi: 10.1016/j.jmr.2006.10.016](https://doi.org/10.1016/j.jmr.2006.10.016) (Peer-review)
35. Eugene S. Mananga, Y. Rumala, and G. S. Boutis, "Finite Pulse Width Artifact Suppression in Spin-1 Quadrupolar Echo Spectra by Phase Cycling,"  
*Journal of Magnetic Resonance, J. Magn. Reson.* 181, 296-303, (2006). [doi: 10.1016/j.jmr.2006.05.015](https://doi.org/10.1016/j.jmr.2006.05.015) (Peer-review)
34. J. R. P. Jayakody, Eugene S. Mananga, A. Khalfan, S. H. Chung, R. Lopato and S. G. Greenbaum, "Multinuclear NMR Studies of Mass Transport of Phosphoric Acid in Water,"  
*Solid State Ionic, Advanced Materials for Emerging Technologies, Proceedings of the 10<sup>th</sup> Asian Conference (World Scientific Publishers, Singapore)*, 19-28, (2006). [doi.org/10.1142/9789812773104\\_0002](https://doi.org/10.1142/9789812773104_0002) *Invited Paper*
33. J. R. P. Jayakody, A. Khalfan, Eugene S. Mananga, S. G. Greenbaum, T. D. Dang, R. Mantz, "NMR Investigation of Water and Methanol Transport in Sulfonated Polyareyleneethioethersulfones for Fuel Cell Applications," (Peer-review)  
*Journal of Power Sources, J. Power Sources*, 156, 195-199, (2006). [doi.org/10.1016/j.jpowsour.2005.05.056](https://doi.org/10.1016/j.jpowsour.2005.05.056)
32. J. R. P. Jayakody, P. E. Stallworth, Eugene S. Mananga, J. Farrington-Zapata, and S. G. Greenbaum, "High Pressure NMR Study of Water Self-Diffusion in NAFION- 117 Membrane," (Peer-review)  
*Journal of Physical Chemistry B, J. Phys. Chem. B*, 108, 4260-4262, (2004). <https://doi.org/10.1021/jp037621+>

## **PUBLICATIONS IN MEDICAL IMAGING & NUCLEAR MEDICINE**

31. Eugene S. Mananga, "Recent Advances of Radiation Detector Systems in Nuclear Medicine Imaging,"  
*Journal of Imaging Science, J Imaging Sci.* 1(1):1-3 (2016)
30. Eugene S. Mananga, "Advances of Radiation Detector Systems in Nuclear Medicine,"  
*Journal of Nuclear Medicine and Radiation Therapy*; 7:6, e117 (2016)
29. Eugene S. Mananga, "Cancer and radiation therapy," *Journal of Nuclear Medicine and Radiation Therapy*; 6:6 (2015)
28. Eugene S. Mananga, "Burden of low back pain in human being," *SM Radiology Journal, SM Radiol. J.*; 1 (1): 1005(2015)
27. Eugene S. Mananga, Georges El Fakhri, J. Schaefferkoetter, Ali Bonab, J. Ouyang, "Myocardial Defect Detection Using PET-CT: Phantom Studies," *PLOS ONE, PONE*, 9, e88200, (2014). [doi: 10.1371/journal.pone.0088200](https://doi.org/10.1371/journal.pone.0088200) (Peer-review)
26. Eugene S. Mananga, Georges El Fakhri, Ali Bonab, Jinsong Ouyang, "Assessment of Myocardial Defect Detectability with PET-CT," *Journal of Nuclear Medicine*, 54, Sup. 2: 98 (2013)

## **BOOK & BOOK CHAPTERS (Peer-Review)**

25. **Eugene S. Mananga**, A. Hollington, and K. Registe "Treatment of Group Theory in Spectroscopy," *Symmetry (Group Theory) and Mathematical Treatment in Chemistry* (2018), <http://dx.doi.org/10.5772/intechopen.75735> *Invited Book Chapter (Peer-review)*
24. **Eugene S. Mananga**, "Mathematical formulations used in solid-state NMR for structural biology," *Application of NMR Spectroscopy, Bentham Science Publishers* (2015), <https://doi.org/10.1016/B978-1-60805-999-7.50005-7> *Invited Book Chapter (Peer-review)*
23. **Eugene S. Mananga**, S. B. Mananga, and A. Reid "Theory and applications in solid-state NMR spectroscopy," *NMR: Theory, Applications and Technology, Nova Science Publishers, Inc.* (2014) <https://novapublishers.com/shop/nuclear-magnetic-resonance-nmr-theory-applications-and-technology> *Invited Book Chapter (Peer-review)*
22. **Eugene S. Mananga** "High-Pressure Nuclear Magnetic Resonance Studies of Fuel Cell Membranes," *UMI Dissertation Services, The City University of New York* (2005) *Ph.D. Dissertation*

## **RESEARCH REPORTS & TECHNICAL/ ABSTRACTS**

21. **Eugene S. Mananga**, Vincent Battaglia, Yanbao Fu, and Robert Kostecki, "The evolution of Li-ion batteries from the conventional to the advanced to the state-of-the-art to the hybridized," *US Department of Energy – Lawrence Berkeley National Laboratory, 2020 Research Report*
20. **Eugene S. Mananga**, Vincent Battaglia, Yanbao Fu, and Robert Kostecki, "30 Years of Different Techniques Applied in Li-ion Batteries," *US Department of Energy – Lawrence Berkeley National Laboratory, 2020 Research Report*
19. **Eugene S. Mananga**, J. A. Libera, K. Z. Pupek, "Using Flame Spray Pyrolysis and Advanced Solid-State NMR Techniques to Synthesize and Characterize, Respectively, Solid-State Li-Ion Battery Materials ( $\text{Li}_7\text{La}_3\text{Zr}_2\text{O}_{12}$ ,  $\text{Li}_7\text{P}_2\text{S}_8\text{I}$ )," *US Department of Energy - Argonne National Laboratory, 2019 Research Report, (July 2019)*
18. **Eugene S. Mananga**, "For Contributions and advanced studies in the Theory of Spin Dynamics in Solid-State Nuclear Magnetic Resonance and Quantum Mechanics," *The Indicator, 99 (6a), 14-24 (June 2018)*
17. **Eugene S. Mananga**, "The Control of Spin Dynamics in Solid-State Nuclear Magnetic Resonance Spectroscopy," *The Indicator, 99 (4a), 19 (April 2018)*
16. **Eugene S. Mananga**, R. Fu, M. Truong, T. A. Cross, "Enhanced Sensitivity and Resolution for Orientational Restraints from Lipid Bilayer-Bound Gramicidin A," *National High Magnetic Field Laboratory, Annual Research Report, 93, (2008)*

## **CONFERENCE PROCEEDINGS/ABSTRACTS**

15. **Eugene S. Mananga**, "Application of Floquet-Magnus Expansion and Fer Expansion Approaches During TPPM Radiation in Solid-State NMR," *60<sup>th</sup> ENC Conference, Asilomar Conference Center, Pacific Grove, CA (2019)*
14. **Eugene S. Mananga**, "Equivalence of Floquet-Magnus and Fer expansions and the investigation of spin dynamics in the three-level system," *59<sup>th</sup> ENC (Experimental NMR Conference), Orlando, FL (2018)*
13. **Eugene S. Mananga**, "Study of the dynamics of quadrupolar spin-1 nuclei via AHT when irradiated with modified composite quadrupolar echo sequences," *58<sup>th</sup> ENC (Experimental NMR), Asilomar Conference Grove, CA (2017)*
12. **Eugene S. Mananga**, "Efficient numerical integrator based on Fer expansion: Application to SSNMR experiments," *3rd International Conf. on Theoretical and Cond. Matter Phys., J. Material Sci. Eng. (2017). doi: 10.4172/2169-0022-C1-079*
11. **Eugene S. Mananga**, "Equivalence between Floquet-Magnus and Fer expansions to investigate the dynamics of a spin system in the three-level system," *3rd International Conference on Theoretical and Condensed Matter Physics, J. Material Sci. Eng. (2017). doi: 10.4172/2169-0022-C1-080*
10. **Eugene S. Mananga**, "FME Approach in Solid-State NMR," *57<sup>th</sup> ENC Expt. NMR Conference, Pittsburg, PA, (2016)*
9. **Eugene S. Mananga**, "Recent development of Spin Dynamics in Solid-State Nuclear Magnetic Resonance," *J. Phys. Chem. Biophys. 2016, 6:3(Suppl), APS, International Conference on Physics, New Orleans, LA. (2016)*
8. **Eugene S. Mananga**, "On Fer and Floquet-Magnus Expansions: Application in Solid-State NMR and Physics," *J. Phys. Chem. Biophys. 2016, 6:3 (Suppl), APS, International Conference on Physics, New Orleans, LA. (2016)*
7. **Eugene S. Mananga**, C. D. Hsu, S. Ishmael, T. Islam and G. S. Boutis, "A study of the precision of average Hamiltonian theory for spin  $I = 1, 3/2$  and  $5/2$  nuclei by investigating a two pulse quadrupolar echo sequence," *American Institute of Physics (AIP) Conference Proceedings, 1140, 85-92 (2009)*
6. G. S. Boutis, C. Renner, N. M. Hunt-Walker, T. Isahkarov, T. Islam, L. Kannangara, P. Kauer, **Eugene S. Mananga**, A. Ntekim, Y. Rumala, D. Wei. "High resolution Q-space Imaging studies of water in elastin," *American Institute of Physics (AIP) Conference Proceedings, 1081, 59-62 (2008)*

5. **Eugene S. Mananga**, R. Roopchand, Y. S. Rumala and G. S. Boutis, "An analysis of the magic echo and solid echo sequence for quadrupolar echo spectroscopy of spin I=1 nuclei by average Hamiltonian theory," *American Institute of Physics (AIP) Conference Proceedings*, 991, 71-74 (2008)
4. M. Sharma, J. Moore, H. Nguyen, D. Murray, **Eugene S. Mananga**, T. A. Cross, "Solid-state NMR studies of uniformly aligned full-length membrane proteins," *49<sup>th</sup> ENC (Experimental NMR)*, Asilomar Conference Grounds, CA (2008)
3. T. A. Cross, M. Sharma, J. Hu, M. Truong, D. Murray, **Eugene S. Mananga**, D. Ni, H. Qin, W. Brey, "Membrane Proteins drug targets and prospects for drug-screening using solid-state NMR," *37<sup>th</sup> Southeastern Magnetic Resonance Conference*, Tallahassee, FL, October 15-17, (2008)
2. Sophia Suarez, J.R. P. Jayakody, **Eugene S. Mananga**, Song-Ho Chung, S. G. Greenbaum, "NMR studies of mass transport in lithium conducting polymer electrolytes," *Unpublished ECS Proceedings*, San Antonio, May, (2004)
1. **Eugene S. Mananga**, S. Greenbaum, P. Stallworth, J. Jayakody, J. Farrington, "Design and development of high pressure NMR to study proton conducting membranes (NAFION)," *First International Conference on Fuel Cell Development and Deployment*, Storrs, Connecticut, March, (2004)

## SELECTED' STUDENTS & FACULTY MENTORED & TRAINED

### **Faculty and Postdoc mentored & Trained**

- 2011-2014 George Bennett (Ph.D. Physics), Adjunct Professor, *William Paterson University* (Eugene advised and supported the applications of Dr. Bennett during his transition from postdoc to faculty position in Physics)
- 2007-2011 Samson Tafon Penn (Ph.D. Physics), I mentored Dr. Penn during his transition from graduate studies to Scientist
- 2011-2013 Alicia Reid (Ph.D. Chemistry), *Medgar Evers College of CUNY* (trained in the theory of Solid-State NMR)

### **Students Advised, Co-Advised, Mentored, Co-Mentored, Supervised and Co-Supervised**

- Summer2022 Faculty Mentor at Brookhaven National Laboratory for a graduate student (Paulin Dongomale) and undergraduate students (Aissata Diop & Fambougouri Diane)
- 2018-2023 Faculty Mentor, NSF S-STEM Scholarship \$5 Million Grant, USA
- 2021-2022 Aissata Diop, B. Olivencia, and C. Rosario, Undergraduate Students at BCC, CUNY Research Scholar Program (Research in solid-state NMR and Lithium-ion Batteries), Student, Faculty-mentor: E. Mananga
- 2021-2022 Erika Lopez, Undergraduate Student at BCC, LSAMP (Research in simulation of solid-state NMR experiments and Lithium-ion Batteries), Student, Faculty-mentor: Eugene Mananga (Supervisor)
- 2020-2021 Lamisa Rusmeha, undergraduate student at Hunter College (honor thesis), Student, E. Mananga (Supervisor)
- 2020-2021 Fambougouri Diane and Daniel Bosah, Undergraduate Students at Bronx Community College, CUNY Research Scholar Program (Research in solid-state NMR and Lithium-ion Batteries), Faculty-mentor: Eugene Mananga
- 2020-2021 Aissata Diop and Malik Pernarh, Undergraduate Student at BCC, LSAMP (Research in simulation of solid-state NMR experiments and Lithium-ion Batteries), Student, Faculty-mentor: Eugene Mananga (Supervisor)
- 2018-2019 Richard Ametepey, Saikou Fadiga, and Erick Canals, Undergraduate Students at BCC, CUNY Research Scholar Program (Research in Physics, NMR, Lithium-ion Batteries), Student, Faculty-mentor: E. Mananga (Supervisor)
- 2017-2018 Willmar Ulloa and Francesca Serrano, Undergraduate Student at BCC, CUNY Research Scholar Program (Research in Physics, NMR, and Fuel Cells), Student, Faculty-mentor: E. Mananga (Supervisor). Ulloa get accepted to several internships in 2019 including the Summer Internship Program at *Princeton University*
- 2017-2018 Alagah-Komlavi Esseh and Firyal Farage, Undergraduate Students at BCC, Research Grant (CCRG # 1517)
- 2017-2018 Research topics: Numerical simulations of solid-state NMR experiments. Implementation of a General Simulation Program for SSNMR Spectroscopy called SIMPSON. Student, Faculty-mentor: E. Mananga
- 2017-2018 Akil Hollington, *Dept. of Chemistry, Syracuse University*; K. Registe, *Dept. of Mathematics, Lehman College*
- 2016-2017 Ahmed Saeed, Undergraduate Student at BCC CUNY Research Scholar Program (Research in Physics, NMR, and Fuel Cells), Student, Faculty-mentor: Eugene Mananga (Supervisor)
- 2015-2017 Afoma Yvonne Chidune, *LECOM Doctorate School of Pharmacy*
- 2016-2017 Felix Asante, Undergraduate Student in Chemistry, *State University of New York*
- 2015-2016 Angel Valentino, Undergraduate Student at BCC, CUNY Research Scholar Program (Research in Physics, NMR, and Fuel Cells), Student, Faculty-mentor: Eugene Mananga (Supervisor)
- 2015-2016 Azime Aydognmus, Undergraduate Student, BCC (Physical Therapy Doctorate Student, *Kean University*)
- 2014-2016 Carol Ram-carela, Undergraduate Student, *Lehman College*
- 2014-2015 Alexis Sobecki, Undergraduate Student, *Saint John's University*
- 2011-2016 Lesan Mattis, Undergraduate Student at *Hunter College*
- 2006-2008 T. Islam, Undergraduate Student, Faculty-mentor: Greg, Boutis, York College of CUNY (Co-Supervisor)
- 2006-2008 S. Ishmael, Undergraduate Student, Faculty-mentor: Greg, Boutis, York College-CUNY (Co-Supervisor)
- 2007-2008 C. D. Hsu, High School Student, Faculty-mentor: Greg, Boutis, York College-CUNY (Co-Supervisor)
- 2007-2008 Rabia Roopchand, Master thesis in Physics, faculty-mentor: Greg. Boutis, York College-CUNY (Co-Supervisor)
- 2006-2007 R. Roopchand, Master thesis in Physics, faculty-mentor: Greg. Boutis, York College-CUNY of (Co-Supervisor)
- 2005-2006 Yisa. Rumala, Undergraduate thesis in Physics, faculty-mentor: Greg. Boutis. Co-Supervisor: Dr. Mananga. Rumala won the NSF Graduate Fellow to the *University of Michigan Ann Arbor* and *Princeton University*
- 2004-2007 Dr. Tamara Hinton, Currently Medical Doctor (Eugene advised and supported Dr. Hinton effort during her transition From undergraduate School at *City College of New York* to Pre-medical school & to medical School)
- 1992-Present Betina Mananga (entered the University at age 15 and obtained her bachelor's in mathematics at age 19 at the *University of Paris, Paris Sud, Orsay*)

## TEACHING EXPERIENCE

Adjunct Professor	Applied Physics Department	New York University	2015 – Present
Doctoral Faculty	Ph.D. Program in Physics	City University of New York/ Graduate Center	2015 – Present
Doctoral Faculty	Ph.D. Program in Chemistry	City University of New York/ Graduate Center	2016 – Present
Associate Professor	Eng., Phys & Techno. Dept.	City University of New York/ Bronx C. College	2015 – Present
Adjunct Full Professor	Physics Department	Saint John's University of New York City	2014 – 2015
Adjunct Assist. Professor	Physics & Astronomy Dept.	City University of New York/ Lehman College	2014
Adjunct Full Professor	Physics Department	Saint John's University of New York City	Fall 2011
Adjunct Assist. Professor	Physics Department	City University of New York/ Queens College	Fall 2011
Adjunct Assist. Professor	Physics Department	The City University of New York/ Hunter College	Fall 2011
Adjunct Assist. Professor	Physics Department	The City University of New York/ MEC	Spring 2009
Visiting Assist. Professor	Physics/OEODP Department	City University of New York/ Graduate Center	2006 – 2007
Adjunct Assist. Professor	Earth & Physical Sc. Dept.	The City University of New York/ York College	2005 -2007
Adjunct Lecturer	Physical Sciences Dept.	City University of New York/Kingsborough C.C.	Spring 2005
Adjunct Lecturer	Physics & Astronomy Dept.	The City University of New York/ Hunter College	2002 – 2005
Adjunct Lecturer	Physics Department	The City University of New York/ City College	2000 – 2001
Adjunct Lecturer	Physics department	University of Sciences & Technique - Franceville	1996 – 1999
Lecturer	Physical Sciences	Department of National Education - Franceville	1995 – 1999
Teaching Assistant	Physics	The University of Yaounde	1993 – 1994

### **New York University**

- Taught PH-UY1213 Physics Course: Motion and Sound
- Taught PH-UY1213 Physics Course: algebra based course
- Taught PH-UY1013 Physics Course: Mechanics
- Taught PH-UY1223 Physics Course: Electricity and light
- Taught PH-UY2033 Physics Course: Waves, Optics, and Thermodynamics
- Taught PH-UY2023 Physics Course: Electric, Magnetism, and Fluids
- Taught PH-UY2121 General Physics Lab I

### **Saint John's University of New York City**

- Taught undergraduate physics laboratory, Lectures and Recitations
- Taught PHY1622 and PHY1942 Physics Courses

### **The City University of New York – Bronx Community College**

- ♦ Taught Electronics Course (ELC 15), Computer Applications: Word, Excel, PowerPoint
- ♦ Taught NMT83: Radiation Physics and Dosimetry.
- Taught NMT81: Orientation to Nuclear Medicine.
- Instructed Radiation Physics: Course RAD71
- Taught Physics Courses: PHY 11, PHY 12, PHY 14, & PHY 24
- Supervising research and mentoring students under the CUNY RESEARCH SCHOLAR PROGRAM, and THE NEXT BIG THING INQUIRY GRANT 2017
- Taught Physics Courses: 21, 31, 32
- Taught Astronomy Courses: 101, 111

### **The City University of New York – Lehman College**

- Instructed undergraduate physics laboratory, Lectures and Recitations.
- Taught general physics: lecture and recitation

### **The City University of New York – Queens College**

- Instructed undergraduate physics laboratory, prepared and graded exams
- Taught general physics: lecture, recitation, and labs

### **The City University of New York – Medgars Ever College**

- Taught general physics: lecture and recitation.

### **The City University of New York – York College**

- Taught physics 110, supervised research and mentored students

### **The City University of New York – Hunter College**

- Taught physics 110
- Taught astronomy course based on computer simulation sky-map program

**The City University of New York – The Graduate Center  
Office of Educational Opportunity & Diversity Program**

- Seek to expand opportunities for science students in Doctoral study and to create a network linking students, faculty and administrators
- Assisted in the recruitment of underrepresented students in doctoral study, and serve as mentor for recipients of the MAGNET fellowships
- Co-coordinator of the monthly MAGNET roundtable with underrepresented students for academic discussions, mentoring, and peer support
- Mentored AGEP MAGNET-STEM scholars at the Graduate Center

**The City University of New York – City College**

- Instructed undergraduate physics laboratory, prepared and graded exams
- Graded electromagnetism assignments for graduate students in physics

**PROFESSIONAL DEVELOPMENT**

- Exascale Computing Project Annual Meeting (ECP-AM), virtually May 02-6, 2022
- Sustainable Horizons Institute (SHI) and DOE Exascale Computing Project (ECP), Sustainable Research Pathways (SRP)-High Performing Computing (HPC), SRP-HPC Workshop, Feb. 11-21, 2022
- Sustainable Horizons Institute and Berkeley Lab, Sustainable Research Pathways Workshop, Nov 30-Dec. 03, 2021
- PANELIST in a roundtable discussion hosted by the Office of Workforce Development for Teachers and Scientists of the U.S Department of Energy's Office of Science (Nominated by Argonne National Laboratory), October 6, 2021, Virtual
- "InCREASE", The Interdisciplinary Consortium for Research and Educational Access in Science and Engineering, Workshop at Argonne National Laboratory, November 12, 2020
- VIRTUAL NASA HBCU/MSI Technology Infusion Road Tour, November 18-19, 2020
- AAC&U Knowledge Exchange Institute May 21-24, 2019 Alexandria, VA
- 2019 NSF CAREER Bootcamp Program, Advanced Science Research Center, Graduate Center, CUNY, (Jan.– Jul.) 2019
- New York Section of the American Chemical Society (ACS), New York., January 20, 2018
- 2018 PKAL STEM LEADERSHIP INSTITUTE II, STEM Faculty Participant, Claggett Center, Maryland. July, 2018
- Cottrell Scholars Collaborative New Faculty Workshop, American Chemical Society (ACS) National Offices, Washington D.C., August 3-5, 2017
- BNL Electron-Ion-Collider Info Meeting, Brookhaven National Laboratory, May 23-25, 2017
- HSI STEM Active Learning Professional Development Summer Institute at Lehman College of CUNY, July 10-11, 2017
- Workshop on NSF Educational and Human Resources (EHR) Grants, RFCUNY, May 17, 2017
- CUNY Faculty Diversity and Inclusion Conference 2017, CUNY at the Crossroads: Diversity and Intersectionality in Action, Graduate Center, March 31, 2017
- International Conference on Physics, CPD Certificate of Attendance and Learning Tool, New Orleans, LA. June 2016
- BCC/CUNY, Center for Teaching, Learning and Technology, CTLT, New Faculty Seminar, January 11-13, 2016
- Princeton University and the Institute of Advanced Study (IAS) Princeton Summer School on Condensed Matter Physics, Prospects in Theoretical Physics, Princeton, New Jersey, July 2015
- Joint Meeting of the Biophysical Society 52nd Annual Meeting and 16th International Biophysics Congress, Long Beach, CA, February 02-06, 2008
- MIT, School on Bio-molecular Solid-State NMR, Stowe, Vermont, January 2008 (1<sup>st</sup> U.S.A - Canada Winter School)
- 2006 Annual Biomedical Research Conference for Minority Students (ABRCMS), CA, November 8 -11, 2006, USA
- NIH Regional Seminar on Program Funding and Grants Administration, Co-Hosted by Harvard University and Massachusetts General Hospital, Boston, MA, March 2006
- Annual Conference of the National Society of Black Physicists and Hispanic Physicists, San Jose, CA, February 2006
- 7th Annual HBCU - UP, National Research Conference, Baltimore, Maryland, February 09-12, 2006
- Poster Judge at the 2005 Annual Biomedical Research Conference for Minority Students (ABRCMS), Atlanta, GA, 2005
- 2005 Institute on Teaching and Mentoring/12TH Annual IOTAM, Arlington, VA, October 27-30, 2005, USA
- 2005 SACNAS (Society for Advancement of Chicanos and Native Americans in Science) National Conference, 2005, USA
- EMERGE Workshop/Conference 2005: From Conception to Realization: Empowering the Scientists, Engineers and Innovators of Tomorrow, Atlanta, GA, September 22 - 24, 2005, USA
- Annual Conference of the National Society of Black Physicists and Black Physicists Students, Florida, Orlando, 2005
- Annual Conference of the National Society of Black Physicists and Black Physicists Students, Washington, D.C, 2004
- GRC (Gordon Research Conference) on Fuel Cells, 2002, Roger Williams University, RI, USA

**SELECTED TALKS & POSTER'S PRESENTATIONS**

- **E. S. Mananga**, "Dehydrogenation of 2-Propanol Using NWChem", Brookhaven National Laboratory, Sustainable Horizons Institute (SHI), Exascale Computing Project (ECP), & Department of Energy, July 12, 2022 *(Poster)*
- Aissata Diop, **E. S. Mananga**, Hubertus Van Dam, "Reaction Mechanism for 2-propanol at the Zeolite", Brookhaven National Laboratory, SHI, Exascale Computing Project, & DOE, July 12, 2022 *(Poster)*
- Fambougouri Diane, **E. S. Mananga**, Hubertus Van Dam, "Results: Density Functional Theory (DFT) Calculation of 2-Propanol and Propene", Brookhaven National Laboratory, SHI, ECP, & DOE, July 12, 2022 *(Poster)*
- Paulin Dongomale, **E. S. Mananga**, Hubertus Van Dam, "Investigate the Dehydrogenation of 2-Propanol Using NWChem", Brookhaven National Laboratory, SHI, Exascale Computing Project, & DOE, July 12, 2022 *(Poster)*
- Aissata Diop, Brandon Olivencia, & **E. S. Mananga**, "Spin Dynamics in Solid-State NMR: Application to Spin Echo Sequence", CUNY Research Scholar Program, 2022 Summer Symposium, August 01, 2022 *(Poster)*

- **E. S. Mananga**, “Solid-State NMR study and Density Functional Theory Calculations of Structure and Dynamics of Iodide-Based Li7P2S8I Super-Ionic Conductor”, SHI and DOE Exascale Computing Project (ECP), Sustainable Research Pathways (SRP)-High Performing Computing (HPC), SRP-HPC Workshop, Feb. 14, 2022 (Poster)
- **E. S. Mananga**, “Solid-State NMR study and Density Functional Theory Calculations of Structure and Dynamics of Iodide-Based Li7P2S8I Super-Ionic Conductor”, SHI and Berkeley Lab, SRP Workshop, Dec. 01, 2021 (Poster)
- **E. S. Mananga**, “The evolution of Li-ion batteries from the conventional to the advanced to the state-of-the-art to the hybridized”, Lawrence Berkeley National Laboratory & Berkeley Lab, August 2021 (Talk)
- **E. S. Mananga**, “Brief History of NMR and 30 Years of Different Techniques Applied in Li-Ion Batteries”, Lawrence Berkeley National Laboratory & Berkeley Lab, August 2020 (Talk)
- **E. S. Mananga**, “physics/engineering/career options/undergrad research,” BCC/ NSF S-STEM Boot Camp, 2019 (Talk)
- **E. S. Mananga**, “Using Advanced Solid-State NMR to Investigate Solid-State Li-Ion Battery Materials (LLZO, LPSI) Synthesized by Flame Spray Pyrolysis Technique”, Argonne National Laboratory, July 2019 (Talk)
- **E. S. Mananga**, “The Control of Spin Dynamics in Solid-State Nuclear Magnetic Resonance Spectroscopy,” Distinguished Scientist Award Lecture, American Chemical Society, New York Section, Pace University, April 2018 (Talk)
- **E. S. Mananga**, “Spin dynamics in Solid State NMR and Physics”, Henry Wasser Award Lecture, Academy of Humanities and Sciences, The Graduate Center, CUNY, 2017 (Talk)
- **E. S. Mananga**, “Efficient numerical integrator based on Fer expansion: Application to solid-state NMR experiments”, 3rd International Conference on Theoretical and Condensed Matter Physics, New York, 2017 (Talk)
- **E. S. Mananga**, “Equivalence between floquet-magnus and Fer expansions to investigate the dynamics of a spin system in the three-level system”, 3rd International Conf. on Theoretical and Condensed Matter Physics, New York, 2017 (Poster)
- **E. S. Mananga**, “Impact of Physics Newton’s Laws in Chemistry”, New Faculty Workshop, American Chemical Society (ACS) National Offices, Washington D.C., 2017 (Talk)
- **E. S. Mananga**, “On the Equivalence of the Floquet-Magnus and Fer expansions to Investigate the Dynamics of a Spin System in the Three-Level System”, Center for Quantum Phenomena Inaugural Symposium, NYU, 2017 (Poster)
- **E. S. Mananga**, “Study of the Dynamics of Quadrupolar Spin-1 Via AHT When Irradiated With Modified Composite Quadrupolar Echo Sequences”, 58<sup>th</sup> Experimental NMR Conference, ENC 2017 Asilomar Conference Center (Poster)
- **E. S. Mananga**, “Multi-level encryption-based security approach for IoT devices”, Actualization of the Internet of Things Conference, 2017 Forum on Industrial and Applied Physics (FIAP) Monterey, CA (Poster Abstract Accepted)
- **E. S. Mananga**, “On Fer and Floquet-Magnus Expansions: Application in Solid-State Nuclear Magnetic Resonance and Physics”, American Physical Society (APS), International Conference on Physics, New Orleans, LA. 2016 (Talk)
- **E. S. Mananga**, “Recent development of Spin Dynamics in Solid-State Nuclear Magnetic Resonance”, American Physical Society, International Conf. on Physics, New Orleans, LA. 2016 (Poster)
- **E. S. Mananga**, “Floquet-Magnus Expansion Approach in Solid-State Nuclear Magnetic Resonance”, 57<sup>th</sup> Experimental Nuclear Magnetic Conference, ENC 2016 Pittsburg, PA (Poster)
- **E. S. Mananga**, “Applications of Nuclear Magnetic Resonance (NMR) in Geophysics: Oil and Gas Exploration Industry”, World Congress and Expo on Materials Science and Polymer Engineering, Dubai, UAE, November 2015 (declined Talk)
- **E. S. Mananga**, “Theoretical methods in NMR: introduction of Floquet-Magnus expansion as a new approach to control spin dynamics in solid-state NMR”, Hofstra University, December 2014 (Talk)
- **E. S. Mananga**, “NMR Related Topics: Theory, Experiments, Simulations, and methodology”, Schlumberger Dhahran Carbonate Research Center, Kingdom of Saudi Arabia, November 2014 (Talk)
- **E. S. Mananga**, “Basics operation of gamma-camera and the QC tests and possible artifacts used for evaluation”, The City University of New York, BCC, July 2014 (Talk)
- **E. S. Mananga**, “Optimization of lesion detection into pediatric bone SPECT”, Massachusetts General Hospital, Division of Nuclear Medicine, Department of Radiology, September 2013 (Talk)
- **E. S. Mananga**, J. Ouyang, A. Bonab, G. El Fakhri, “Assessment of Myocardial Defect Detectability with PET-CT”, Society of Nuclear Medicine and Molecular Imaging, Vancouver, Canada, Annual Meeting, June 2013 (Talk)
- **E. S. Mananga**, “Application of Physics in Medicine: Cardiac PET and PET/CT Imaging”, National Society of Black Engineers Conference, 39<sup>th</sup> Annual Convention, Indianapolis, March 2013 (Talk)
- **E. S. Mananga**, “Floquet-Magnus Expansion: A New Theoretical Approach to Control Spin Dynamics in NMR”, Massachusetts Institute of Technology, Dept. of Nuclear Science and Engineering, Quantum Eng. seminar 2013 (Talk)
- **E. S. Mananga**, “Myocardial Defect Detectability using Phantom Studies on PET-CT”, Twelfth Annual New England Science Symposium, The Joseph B. Martin Conf. Center at Harvard Medical School, Harvard University, 2013 (Poster)
- **E. S. Mananga**, “Myocardium Lesion Detectability in PET Scan”, National Institute of Health (NIH)/National Institute of Biomedical Imaging and Bioengineering, June 2012 (Poster)
- **E. S. Mananga**, “The Introduction of the Floquet-Magnus Expansion Approach to NMR Spectroscopy”, Massachusetts General Hospital and Harvard Medical School, Seminar Radiology August 2011 (Talk)
- **E. S. Mananga**, “The Introduction of the Floquet-Magnus Expansion Approach to Solid-State NMR Spectroscopy and its Applications”, New York University, Seminar Chemistry (NMR), May 2011 (Talk)
- ♦ **E. S. Mananga**, “Prospect For Diffusion Enhancement of Signal and Resolution in MRI”, Commissariat à l’Energie Atomique, NEUROSPIN, DSV, I2BM, MRI Seminar October 2010 (Talk)
- **E. S. Mananga**, “Solid-State NMR: An Important Technique for Membrane Proteins and Peptides Structure Elucidation” University of Pennsylvania, Seminar Chemistry December 2008 (Talk)
- **E. S. Mananga**, “Sensitivity Improvement in Solid State NMR,” National High Magnetic Field Laboratory, Center for interdisciplinary magnetic resonance, NMR Seminar, November 2008 (Talk)
- **E. S. Mananga**, M. Truong, M. Sharma, and T. A. Cross, “Enhanced Sensitivity and Resolution for Orientational Restraints from Lipid Bilayer-Bound Gramicidin A”. 37<sup>th</sup> Southeastern Magnetic Resonance Conference, 2008 (Poster)



- **E. S. Mananga**, “*Solid-State NMR: an Important Technique for Proteins and Peptides Structure Elucidation*”. Rochester Institute of Technology: Center for Imaging Science in the College of Science, Future Faculty Career Exploration Program, Rochester, New York, *September 2008* (Talk)
- **E. S. Mananga**, “*Mathematical Foundation of the Determination of Proteins Structure From Orientational Constraints,*” National High Magnetic Field Laboratory, CIMAR, NMR Seminar, *August 2008* (Talk)
- G. S. Boutis, N. M. Hunt-Walker, A. Borovitsky, T. Islam, **E. S. Mananga**, O. A. Mitchell, “*Probing anisotropic motion of water in thermally and mechanically strained elastin by 2H double-quantum NMR*”, Magnetic Resonance in Porous Media (MRPM9), MRI Proceedings of the 9<sup>th</sup> International Bologna Conference, (Cambridge, MA, USA) *2008* (Talk)
- G. Boutis, N. Walker, A. Borovitsky, T. Islam, **E. S. Mananga**, O. A. Mitchell, “*Probing anisotropic motion of water in thermally and mechanically strained elastin by 2H double-quantum NMR*”. 49<sup>th</sup> ENC, Asilomar Conf., CA. *2008* (Poster)
- G. S. Boutis and **E. S. Mananga**, “*Probing the validity of average Hamiltonian theory for spin I=1, 3/2 and 5/2 nuclei by analyzing a simple two pulse sequence*”, 49<sup>th</sup> ENC, Asilomar Conf. Grounds, CA. *2008* (Poster)
- R. Roopchand, **E. S. Mananga**, and G. S. Boutis, “*A Phase cycling schemes for suppressing finite pulse width artifacts of composite pulses for spin I=1 quadrupolar echo spectroscopy*”. 49<sup>th</sup> ENC (Experimental Nuclear Magnetic Resonance Conference), Asilomar Conference Grounds, Pacific Grove, CA. *March 2008* (Poster)
- **E. S. Mananga**, C. D. Hsu, S. Ishmael, T. Islam and G. S. Boutis, “*A study of the precision of average Hamiltonian theory for spin 3/2 and 5/2 nuclei and suppression of finite pulse width artifacts by phase cycling for these spin systems*”, Joint Annual Conference of the NSBP/ NSHP, Washington D.C., *February 2008* (Poster)
- Jaime Farrington, E. S. Mananga, J. Jayakody and S. G. Greenbaum, “*Development and application of NMR instrumentation to Determine ionic self-diffusion coefficients as a function of applied hydrostatic pressure*”, Joint Annual Conference of the NSBP/NSHP, Washington D.C., *February 2008* (Poster)
- **E. S. Mananga**, R. Roopchand, Y. Rumala and G. S. Boutis, “*Controlling the dynamics of quadrupolar nuclei by mean of average Hamiltonian theory*”, National High Magnetic Field Laboratory, Tallahassee, FL. *August 2007* (Talk)
- **E. S. Mananga**, R. Roopchand, Y. Rumala and G. Boutis, “*On the application of magic echo cycles for quadrupolar echo spectroscopy of spin -1*”, 49<sup>th</sup> Rocky Mountain Conf. on Analytical Chemistry, Colorado, *July 2007* (Poster)
- **E. S. Mananga**, C. Renner, C. Hsu, S. Ishmael, T. Islam, and G. S. Boutis, “*Controlling the spin dynamics of I = 1, 3/2 and 5/2 nuclear spins by average Hamiltonian theory*”, 49<sup>th</sup> Rocky Mountain Conf. on Analytical Chemistry, CO *2007* (Poster)
- R. Roopchand, **E. S. Mananga**, C. Hsu, S. Ishmael, T. Islam, and G. S. Boutis, “*Phase cycling schemes for suppressing finite pulse width artifacts of composite pulses for spin I=1 quadrupolar echo spectroscopy*”, 49<sup>th</sup> Rocky Mountain Conference on Analytical Chemistry, Breckenridge, Colorado, *July 2007* (Poster)
- ♦ **E. S. Mananga**, RCN NMR Symposium and Workshop, Solid-State NMR Spectroscopy of Metals in Biological Systems and in Materials, University of Delaware, Newark, DE, *June 2007* (Poster)
- **E. S. Mananga**, Y. Rumala, and G. S. Boutis “*Finite pulse width artifact suppression in spin-1 quadrupolar echo spectroscopy by phase cycling*”, 48<sup>th</sup> ENC (Experimental NMR Conf.), Solid State NMR, FL. *2007* (Poster)
- **E. S. Mananga**, R. Roopchand, Y. S. Rumala and G. S. Boutis, “*On The Application Of Magic Echo Cycles For Quadrupolar Echo Spectroscopy of Spin -1*”, 48<sup>th</sup> ENC (Experimental NMR Conf.), Solid State NMR, FL. *2007* (Poster)
- C. Renner, G. Boutis, **E. S. Mananga** “*High resolution NMR scattering studies of water confinement in elastin*”, 48<sup>th</sup> ENC (Experimental Nuclear Magnetic Resonance Conf.), Molecular and Cellular Imaging, FL. *2007* (Poster)
- **E. S. Mananga**, R. Roopchand, Y. S. Rumala and G. S. Boutis, “*The application of solid - echo and magic - echo cycles for quadrupolar echo spectroscopy of spin-1 nuclei*”, Joint Annual Conf. of the National Society of Black Physicists and Hispanic Physicists, Boston, MA. *2007* (Talk)
- **E. S. Mananga**, Y. Rumala, and G. S. Boutis, “*Finite pulse width artifact removal in spin-1 quadrupolar echo spectra by phase cycling*”, Rensselaer Polytechnic Institute, Department of Physics, Applied Physics and Astronomy, *2006* (Talk)
- **E. S. Mananga**, J. Jayakody, A. Khalfan, S. Greenbaum, T. Dong, Z. Bai, and R. Mantz, “*NMR Studies of Water and Methanol Transport in Highly Sulfonated Membranes for Fuel Cells*”, APS Conf., MD, *2006* (Poster)
- Y. Rumala, **E. S. Mananga**, and G. Boutis, “*Development of Strong Magnetic Field Gradient Coils for Q-Space Nuclear NMR Imaging*”, 9<sup>th</sup> Annual Science & Engineering Conference at The Graduate Center of CUNY, NY., *2006* (Poster)
- Steve Greenbaum, Sophia Suarez, J.R. P. Jayakody, **E. S. Mananga**, “*NMR Studies of Mass Transport in Lithium Conducting Polymer Electrolytes*”, 205<sup>th</sup> Conference of the Electrochemical Society, San Antonio, Texas *2004* (Poster)

## PROFESSIONAL AFFILIATIONS

- New York Academy of Sciences (member since 2006)
- CUNY Academy for the Humanities & Sciences (member since 2017)
- Electrochemical Society, ECS (member since 2004)
- American Physical Society, APS (member since 2001)
- National Society of Black Physicists, NSBP (member since 2004), USA
- National Society of Black Engineers, NSBE (member since 2013), USA
- Society of Nuclear Medicine & Molecular Imaging, SNMMI (member since 2013)
- American association for the Advancement of Science, AAAS (member since 2022)
- Society for Advancement of Chicanos/Hispanics & Native Americans in Science, SACNAS (member since 2005)