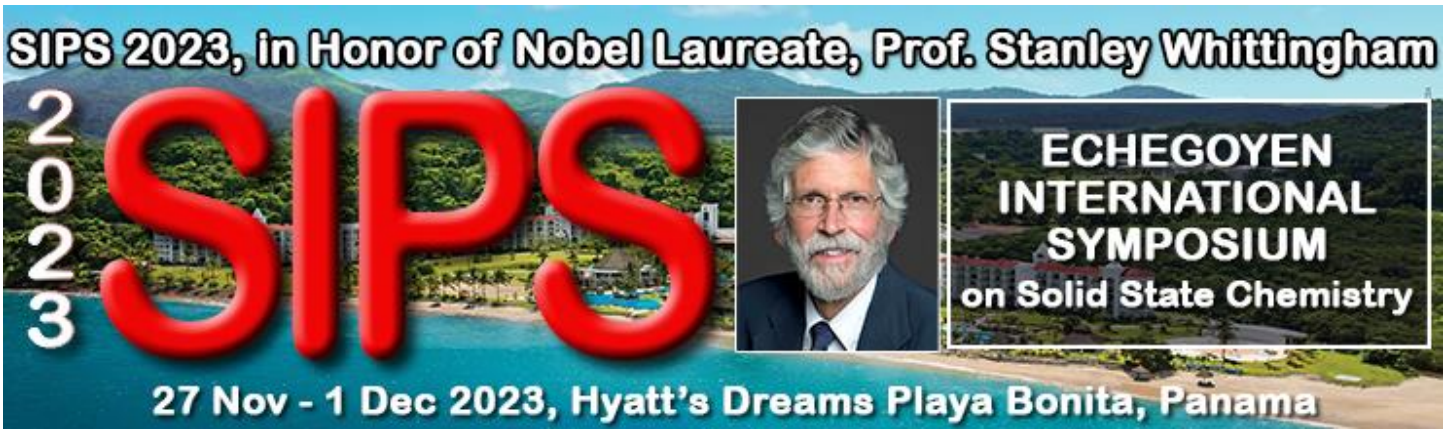

CV of Prof. Luis Echegoyen

PERSONAL STATUS

Born: January 17, 1951, in La Habana, Cuba
Citizenship: Citizen of the United States of America

LANGUAGES

Fully proficient in both English and Spanish
(Speak, read, and write)

EDUCATIONAL BACKGROUND

a)	B. S.	(1971)	University of Puerto Rico, Río Piedras, Puerto Rico (Magna Cum Laude)
b)	Ph. D.	(1974)	University of Puerto Rico, Río Piedras, Puerto Rico (work done under the supervision of Prof. G. R. Stevenson)
c)	Postdoctorate	(1975)	University of Wisconsin at Madison (work done under the supervision of Prof. S. F. Nelsen)

THESIS

"Thermodynamic Parameters Controlling the Stability of Anion Radicals in Solution."
(Work done under the supervision of Prof. G. R. Stevenson.)

PROFESSIONAL POSITIONS

a) Teaching Assistant at the University of Puerto Rico, (1971-1972)

b) Research Corporation Fellow at the University of Puerto Rico, (1972-1974)

c) Postdoctoral Research Associate at the University of Wisconsin at Madison, (1974-1975)

d) Chemist I, Nuclear Magnetic Resonance Spectroscopist at Union Carbide Corporation, Bound Brook, New Jersey, (1975-1977)

e) Assistant Professor at the University of Puerto Rico, (1977-1980)

f) Associate Professor at the University of Puerto Rico, (1980-1983)

g) Adjunct Associate Professor at the University of Maryland, College Park, Maryland, (1982-1983)

h) Program Officer, Chemical Dynamics Program, National Science Foundation, Washington, D. C., (1982-1983)

i) Associate Professor at the University of Miami, Coral Gables, Florida, (1983-1987)

j) Member of the Chemistry Advisory Committee - NSF, (1986-1989)

k) Professor at the University of Miami, Coral Gables, Florida, (1987-2002)

l) Sabbatical at the Universite Louis Pasteur, Strasbourg, France, with Prof. Jean-Marie Lehn, (1990)

m) Sabbatical at the ETH, Zürich, Switzerland, with Prof. François Diederich, (1997-8)

n) Chairman at Clemson University, Clemson, SC, (2002-2006)

o) Professor of Chemistry, Clemson University, Clemson, SC (2002-2010)

p) Director, Chemistry Division, National Science Foundation (2006-2010)

q) Robert A. Welch Professor at the University of Texas at El Paso, El Paso, Texas, (2010-)

r) President-elect of the ACS for 2019, President - 2020

TEACHING EXPERIENCE

a) Instrumental Analysis Laboratory Course
b) General Chemistry Laboratory Course
c) General Chemistry Course (both semesters)
d) Honors General Chemistry Course
e) Graduate Physical Chemistry; Thermodynamics, Statistical Thermodynamics and Chemical Kinetics
f) Undergraduate Experimental Physical Chemistry (both semesters)
g) Undergraduate Physical Chemistry; Thermodynamics, Quantum Mechanics, Statistical Thermodynamics, Kinetics, and Spectroscopy
h) Magnetic Resonance Spectroscopy, both ESR and NMR, at the graduate level
i) Short Course (12 hours) of NMR Spectroscopy (^{1}H and ^{19}F) given to private industry (Hoffman-LaRoche)

j) Fourier Transform NMR; graduate level and mini-course given at different places, such as U. Puerto Rico, Humacao, and U. of Sao Paulo, Sao Paulo, Brasil
k) Quantitative Chemical Analysis
l) ESR Spectroscopy: Basic Principles and Applications, NMR Institute Short Course, Miami
m) Short Course (10 hours) of Electrochemistry and Supramolecular Science, given at Universidad Autónoma de Madrid, June, 2001
n) ESR/Electrochemistry/NMR Basic Principles Chemistry Course, Spring 2015

ADMINISTRATIVE AND PROFESSIONAL EXPERIENCE

a) President, ACS Recruiting Committee, U. Puerto Rico (1978)
b) President, Graduate Exam Committee (Orientation, Qualifying, and Cumulative Exams), U. Puerto Rico (1977-1979)
c) Natural Science Library Committee (Representative for the Chemistry Department), U. Puerto Rico (1979-1982)
d) In charge of Major Instrument Room, U. Puerto Rico (1979-1982)
e) Member, Academic Affairs Committee, U. Puerto Rico (1980-1982)
f) Program Officer, Chemical Dynamics, National Science Foundation, Washington, D. C. (1982-1983)
g) Chairman, Physical Chemistry Division, University of Miami (1984-1994)
h) Member, Curriculum Committee, U. of Miami (1985- 1987)
i) Member, Tenure and Promotion Committee, Faculty of Arts and Sciences, U. of Miami (1989-92)
j) Member, Patent and Copyright Committee, U. of Miami (1986-1988)
k) Member, Tenure and Promotion Committee, Provost Level, U. of Miami (1992-1995)
l) Chairman of several Faculty Search Committees in Physical Chemistry, U. of Miami, (1985-2002)
m) Member, Chemistry Chairman Search Committee, U. Miami (1992-1993)
s) Associate Chair of Graduate Studies, U. Miami (1999-2001)
t) Chairman, Chemistry Department, Clemson University, SC (2002-2006)
u) Elected Member of CEOSE (Committee for Equal Opportunity in Science & Engineering)-NSF-Congressionally mandated committee (2003-6). Extended for 2006-9, cancelled due to NSF employment in 2006.
v) Member of Mathematical and Physical Sciences Advisory Committee of the NSF (2003-5)
w) Member of ACS Committee on Science (2003-2006)
x) Appointed member of the US National Committee for IUPAC (started fall, 2005
y) Member of Editorial Board, *Journal of the Mexican Chemical Society* (2005-)
z) Member of Editorial Board, *Fullerenes, Nanotubes, and Carbon Nanostructures* (2006-)
aa) Member of the Board of the Council for Chemical Research (2008-2010)
bb) Vice-Chair, Gordon Research Coneference on “Physical Organic

Chemistry", 2009

cc) Chair, Gordon Research Conference on "Physical Organic Chemistry", 2011

dd) Member of the Board of Trustees, Instituto Madrileño de Educación Avanzada (IMDEA) Nanociencias (Madrid, Spain, 2008-present)

ee) Member of the International Advisory Board, Physical Chemistry of Solid Surfaces (PCOSS) Institute, Xiamen, China, 2009-present

ff) Appointed Robert A. Welch Chair Professor of Chemistry at the University of Texas at El Paso (2010-)

gg) Editor in Chief, *Journal of Physical Organic Chemistry*, (2011-2018)

hh) Society for Advancement of Chicanos and Native Americans in Science Board Member – (2012-2015)

ii) Open Chemistry Collaborative in Diversity Equity (OXIDE) Board Member, (2012-Present); Chair (2017-2020)

jj) University of Texas San Antonio PREM External Advisory Committee Member-San Antonio, TX, (2015-2018)

kk) University of South Dakota Advisory Board Member-Vermillion, SD, (2016-2018)

ll) University of California Santa Barbara MRL External Advisory Board Member, Santa Barbara, CA, (2016-2019)

mm) Panelist for various NSF Meetings throughout the year

nn) Selection Committee for the George A. Olah Award in Hydrocarbon or Petroleum Chemistry for the 2018 American Chemical Society (ACS) National Awards.

oo) External Advisory Board (EAB) member to MIT Chemistry 's Diversity, Equity, and Inclusion Committee (DEIC) (2020-)

pp) The Board of the US Mexico Foundation for Science member (2021-)

PRINCIPAL AREAS OF RESEARCH INTEREST

Fullerene Electrochemistry, Monolayer Films, Supramolecular Chemistry, and Spectroscopy.
Endohedral Fullerenes, chemistry and electrochemistry.
Carbon Nanoonions: synthesis, derivatizations and fractionation. Chemical and Electrochemical switching of macrocycle-cation binding.
Active cation transport through membranes.
Preparation of Novel Electronic Materials, Based on Reduction of metal Cation Cryptates.
Organic Metals.
Aggregation of Lipophilic Macrocycles.

SUPERVISORY EXPERIENCE

Graduated two Ph. D. students (Ileana Nieves and Aurora Vassos) and one M. S. student (Jose Rivera) in 1980, a Ph. D. in 1982 (René Maldonado) and another (Angel Kaifer) in 1984. In 1987, Jose Rivera, Deborah Gustowski, Milagros Delgado, and Jaime Nieves all finished their Ph. D., and Jose Almirall finished his M. S. Two students finished their Ph. D.'s in 1990: Lourdes E. Echegoyen, in January, 1990, and Dennisse Parra in May, 1990. Other Ph.D. graduates are Zhihong Chen, who finished in December, 1991, Ms. Yi Li, who finished in May, 1993, and Mr. Qingshan Xie, in 1994. Marielle Gómez-Kaifer, Raphael Lawson, and Francisco Arias received their Ph.D. degrees in 1997. Olena Lukoyanova and Amit Palkar received their Ph.D. degrees in 2007, Bevan Elliott in 2008 and Manuel Chaur

in 2009. Julio Pinzón and Angy Ortiz received their PhD degrees from Clemson University in 2010. Venkata Neti received his PhD at UTEP in 2014 and Maira Cerón and Danisha Rivera received theirs in 2015. Catalina Suárez obtained her MS degree in 2017. Edison Castro received his PhD at UTEP in 2017.

The complete list of students graduated and their thesis titles follows:

1)	Ileana Nieves:	"Structural and Thermodynamic Studies of Divalent Cation Ion Pairs"
2)	Aurora Vassos:	"Hydrogen Bonding and Electron Transfer Reactions of Cyclooctatetraene Anions"
3)	José Rivera:	"Ion Pairing Studies in Radical Ion Systems"
4)	René Maldonado:	"Electron Transfer and Spin Distribution in Anion Radicals Derived from Substituted Cyclooctatraene and Aromatic Compounds"
5)	Angel Kaifer:	"Structural and Charge Effects on the Dynamics and Binding Properties of Macrocyclic Polyether-Metal Complexes"
6)	José Rivera:	"Redox, Photochemical and Photophysical Studies of DNA Base Derivatives, Pyrimidine Dimers and N-7 and N-9 Methyl-substituted Purines"
7)	Deborah Gustowski:	"Cation Effects on the Electrochemistry of Crown Ethers, Lariat Ethers, and Podands"
8)	Jaime E. Nieves:	"ESR Studies of Spin Distribution and Cation Binding in Organic and Biological Systems"
9)	Milagros Delgado:	"Spin Distribution and Binding Properties of Macrocycle Polyether-Metal Complexes and Cyclooctatetraene Derivatives: ESR Studies"
10)	José Almirall:	"Electron Spin Resonance Studies of Novel Cyclooctatetraene-Crown Ether Compounds"
11)	Lourdes Echegoyen:	"Lariat Ethers: From Electrochemically-enhanced Cation Transport to Supramolecular Assemblies"
12)	Dennisse Parra:	"Relaxation Times and Molecular Mechanics Studies of Cryptand-like Behavior of Some Lariat Ethers and Their Metal Cation Complexes"
13)	Zhihong Chen:	"Redox-switched and Lipophilic Ligands: From Enhanced Cation Binding and Transport to Molecular Assemblies"

14) Yi Li: "Cation Exchange Kinetics and Mechanisms of Macrocyclic Polyether Cation Complexes and Chiral Recognition by Triazole-Crown Ligands"

15) Qingshan Xie: "^{23}Na-NMR Studies of Na^+ Transport Mediated by Synthetic Carriers Across Vesicle Membranes and Fullerides of Fullerenes and Fulleroids: An ESR and Electrochemical Study"

16) Raphael Lawson: "Spectroelectrochemistry of Nitroxide Biradicals and Cation Binding Enhancement Studies of Anthraquinone Crown Compounds"

17) Marielle Gómez-Kaifer: "Conformational, Binding, and Electrochemical Studies of Redox-Active Calixarenes"

18) Francisco Arias: "Electrochemistry of Fullerenes and Fullerene Derivatives"

19) Soomi Pyo "Electrochemistry of Molecular Dyads Containing Fullerenes, Porphyrins, or Phthalocyanines and Electrocrystallization of Transition Metal Complexes"

20) Olena Lukoyanova "Studies of the Stability and Potential Applications of Pyrrolidinofullerenes and Other Fullerene Derivatives"

21) Amit Palkar "Development of Fullerene-Based Structures for Photovoltaic and Electronic Applications"

22) Bevan Elliott "Synthesis, Electronic Structure and Reactivity of Endohedral Metallofullerenes and Endohedral Nanostructures"

23) Manuel Chaur "Synthesis and Development of Novel Fullerene-based Structures for Photovoltaics, Electronic Applications and MRI Contrast Agents"

24) Julio Pinzón "Synthesis of Trimetallic Nitride Endohedral Metallofullerene Derivatives for Enhanced Solar Energy Conversion"

25) Angy Ortiz "Design and Regioselective Synthesis of Two and Three-Pronged C60 Fullerene Derivatives and their Applications in Molecular Electronics"

26) Venkata Neti "Design and Synthesis of Porous Organic Frameworks for H_2, CH_4 Storage and for Selective CO_2 Adsorption"

27) Maira Cerón "Novel Endohedral Derivatives of $Sc_3N@C_{2n}$ (n=34, 40)

		and Unique Tether-Controlled *Bis*-Functionalizations of Fullerenes"
28)	Danisha Rivera	"Triphenylamine-, Porphyrin- and Fullerene-Based Derivatives for Photovoltaic and Other Applications"
29)	Catalina Suárez	"Design and Regioselective Synthesis of Fullerene Derivatives for the Construction of Metal-Organic Hybrid Architectures"
30)	Edison Castro	"Synthesis Of New Fullerene Derivatives For Photovoltaic And Biological Applications"
31)	Olivia Fernández-Delgado	"Synthesis of Fullerene Derivatives For Diverse Applications: From Catalysis to Photovoltaics"

AWARDS AND DISTINCTIONS

a) Bausch and Lomb Honorary Science Award (1968)

b) Magna Cum Laude - B. S. Chemistry (1971)

c) Research Corporation Fellow (1972-1974)

d) Postdoctoral Research Fellow (1974-1975)

e) Florida-American Chemical Society Awardee for 1996

f) University of Miami, Provost's Scholarly Activity Award (1997)

g) Elected Fellow of AAAS (2003)

h) Clemson University, College of Engineering and Science Award for Faculty Achievement in the Sciences, for Exemplary Leadership in the Sciences (2004)

i) Herty Medal – Georgia ACS Section (2007)

j) University of Puerto Rico, Rio Piedras, Distinguished Alumnus, 2007

k) Alumni Research Award, Clemson University, 2007

l) Elected Fellow of IUPAC (2009)

m) Elected Fellow of American Chemical Society (2011)

n) ACS Award for Recognizing Underrepresented Minorities in Chemistry for Excellence in Research & Development (2011)

o) Gordon Research Conference Chair, Physical Organic Chemistry Session, Holderness

School, NH, June 26-July 1, 2011.

p) Elected Fellow of the Royal Society of Chemistry (2019)

NAMED LECTURESHIPS, VISITING PROFESSORSHIPS AND CONFERENCE CHAIRS

a) Nelson Lecture Series Speaker, "Buckyball Maracas: Electrochemistry and Reactivity of Trimetallic Nitride Endohedral Fullerenes", University of Miami, 2009

b) Distinguished Guest Professor, Changchun Institute of Applied Chemistry, Chinese Academy of Sciences, 2009

c) L. Carroll King Memorial Lecture Series Speaker, "Buckyball Maracas: Chemical and Electrochemical Properties of Endohedral Fullerenes," Northewestern University, November, 2010

d) Bryan E. Kohler Lectureship, "Playing with Buckyball Maracas: Interplay between the Inside and Outside Properties of Endohedral Fullerenes," Univ. of California, Riverside, November 1-2, 2011

e) 33rd Annual Arthur Sweeny Jr. Lecture, Lehman College, New York City, May 3, 2013, "Buckyball Maracas: the Inside (and Outside) Story of Endohedral Fullerenes"

f) Peter B. Sherry Memorial Lecture, Georgia Tech., Atlanta, GA, April 16, 2015, "Regioselective *Bis*-Additions to Empty and Endohedral Fullerenes: Exohedral or Internal Cluster Control?"

g) Brown and Williamson Distinguished Lecturer, University of Louisville, Louisville, Kentucky, September 25, 2015
"Regioselective *Bis*-Additions to Empty and Endohedral Fullerenes: Pronounced Differences due to the Encapsulated Clusters"

h) Pacifichem "Chemistry of Nanocarbons: Fullerenes, Carbon Nanotubes, Nanographenes and Related Materials" Chair and Co-organizers, December 16-18, 2015

i) Visiting Professor, Université de Strasbourg, Strasbourg, France, May 8-23, 2016

j) Neal Thorpe Memorial Lectureship, Murdock Charitable Trust Conference, Spokane, Washington, November 10, 2017

GRANTS

a) Petroleum Research Fund Type G Award (1978-1980)
"Cation Radical Intermediates in the Mechanisms of Antioxidation, and ESR Study," $10,000

b) Cancer Center of the University of Puerto Rico (1978)
"Clinical Applications of Electron Spin Resonance," $5,000

c) Center for Energy and Environment Research of Puerto Rico, (1977-1978), (1978-1979) $7,000 and $12,000
"Electron Transfer States: A Possible Source of Hydrogen"

d) Office of Graduate Studies and Research of the University of Puerto Rico, (1977-1978), (1978-1979), $5,000 and $5,000

e) NSF - Major Instrument Program (1979)
"Purchase of JEOL FX-900," $63,000

f) NSF - RIMI, (1979-1981), $45,000
"Homogeneous and Hetergeneous Electron Transfer Studies"

g) NIH-MBS, (1981-1984), $130,000
"Redox Studies of Pyrimidine Dimers"

h) MARC - Faculty Fellowship
"Electrochemical and Chemical Redox Studies of Pyrimidine Cyclobutane Dimers,"
"Electrochemical and Electron Spin Resonance Studies of Electron Transfer Processes,"
$30,000 plus their annual salaries (Angel Kaifer and Jose Rivera, Ph. D. students)

i) NIH, (1984-1987), $259,000
"Reversible Redox Control of Macrocycle-Cation Binding," R01 GM 33940

j) NIH, (1985-1988), co-PI with J. D. Puett, $455,973
"Endorphin, Phenothiazine and Enzyme Sites on Calmodulin," R0l GM 35415

k) NIH, (1987-1990), $325,000
"Nonionic Liposomes and Redox Activated Cation Pumps," R0l GM 33940

l) NSF, (1990-1993), $169,000
"Separation of Cation Isotopes by Complexation with Crown Ethers," CHE-9011901

m) NSF, (1992-1996), $344,142
"CRYPTATIUM Species: Preparation and Characterization of a New Family of Expanded Metal Type Materials," DMR-9119986.

n) NATO (1993-96), $6,000
"CRYPTATIUM Complexes: Novel Expanded Metals from Organic Complexes," SRG.921445

o) NSF, (1994-96), $261,000
"Fullerenes, Fulleroids, and Fullerides: Electrochemistry, ESR, and Supramolecular Complexation."
CHE-9313018, granted 11/93.
Extended two additional years until 1999 via a Creativity Extension, with an additional award of $310,000.

p) PRF, (1994-96), $50,000
"Fullerenes, Fulleroids, and Fullerides: Electrochemistry, ESR, and Supramolecular Complexation."
PRF-27827-AC, granted 11/93.

q) NATO (1995), $52,000
“Advanced Research Workshop: Physical Supramolecular Chemistry”
ARW-941404

r) NIH-Fogarty Senior International Fellowship (1997-98), $46,745
“Crown Ether-Fullerenes: Synthesis and Electrochemistry”
1 F06 TW02231-01, granted 7/97.

s) NSF, (1998-2001), $360,000

"Molecular Materials from Complexes with Bipyridine-like Ligands: Novel Electrides"
DMR-9803088, granted 8/98.

t) NSF, (1999-2002), $500,000
"Retro-Bingel and Isomerization Reactions of Fullerene Derivatives *via* Electrochemistry: Synthesis, Mechanisms, and New Materials"
CHE-9816503, granted 1/99.

u) Fulbright: Spain-US Cooperative Program, co-PI Prof. Nazario Martín (1999-2000), $25,000
"Electron Donor Dyads as Electrically Conducting and Superconducting Materials"

v) NSF, (2002-2005), $515,000
"Fullerenes: Reactivity, Supramolecular Interactions, and Devices"
CHE-0135786, granted 2/02.

w) NSF, (2004-2005), $115,313
"Preparation, Functionalization, and Purification of Multilayer Fullerenes (Buckyonions)"

x) NSF, (2005-2008), $623,000
"Fullerene Derivatives and Endohedral Fullerenes: From Supramolecular Self Assembled Structures to Molecular Electronics"
CHE-0509989, granted 7/05.

y) Luna (2005-8), $200,042
"Novel Nanomaterials for Advanced Photonic Applications", granted 9/01/05.

z) NSF, (2010-2011), $147,280
"Fullerene and Endhohedral Fullerene Structures for Applications in Molecular Electronics and MRI"
DMR-1108636, granted 01/11.

aa) NSF, (2011-2014), $450,000 - PI
"Metal and Covalent Organic Frameworks (MOFs and COFs) and Supramolecular Structures Incorporating Fullerene Derivatives "
CHE-1110967, granted 07/11.

bb) NSF, (2011-2014), $225,000 - PI
"International Collaboration in Chemistry: Endohedral Fullerene Donor-Acceptor Dyads for Photovoltaic Applications"
CHE-1124075, granted 08/11.

cc) NSF, (2012-2017), $3,302,000 – PI
"UTEP-UCSB PREM: Fundamental Molecular and Interfacial Design for Next Generation Photovoltaic Systems"
DMR-1205302, granted 05/12.

dd) AFOSR,(2012-2015), $450,469 – PI
"Photoswitchable Donor-Acceptor (D-A) Dyad Interfacial Self-Assembled Monolayers for Organic Photovoltaic Cells""
FA9550-12-1-0053, granted 03/12.

ee) AFOSR,(2012-2015), $190,900 – PI
"(HBCU) - Required Equipment for Photo-switchable Donor-Acceptor (D-A) Dyad Interfacial Self-Assembled Monolayers for Organic Photovoltaic Cells"
FA9550-12-1-0468, granted 09/12.

ff) NSF, (2012-2015), $225,035– PI
MRI: Acquisition of an Electron Paramagnetic Resonance (EPR) Spectrometer for Research and Education in

Chemistry and Physics"
CHE-1228325, granted 09/12.

gg) NSF, (2014-2018), $600,000 - PI
"Regioselective Multiple Additions to Empty and Endohedral Fullerenes"
CHE-1408865, granted 07/14.

hh) NSF, (2018-2021), $399,000 – co-PI
"MRI: Acquisition of an X-ray Diffractometer for Research, Education, and Regional Use"
FED-1827875, granted 08/18.

ii) NSF, (2018-2022), $600,000 – PI
"Fullerene Cages as Molecular Nanocontainers to Stabilize Unprecedented Uranium Clusters and Bonding Motifs"
CHE- 1801317, granted 09/18.

PATENTS

1. W. Gokel, G.; Echegoyen, L. Reversible, electrochemically-switched lariat ethers. US4631119, Us Patent and Trademark Office, 23 Dec 1986.

2. Echegoyen, L.; D. Irwin, M.; M. Rivera-Nazario, D., Photo-switchable fullerene-based materials as interfacial layers in organic photovoltaics. US9837611, US Patent and Trademark Office, 5 December 2017.

3. Echegoyen, L.; M. Rivera-Nazario, D.; Castro-Portillo, E.; Martinez, Z.; Llano, M., [1-3]-thiazine-fulleropyrrolo derivatives of C60 and C70 as HIV-inhibitor agents. US9856272, Us Patent and Trademark Office, 2 January 2018.

PROFESSIONAL AND HONORARY SOCIETIES

a) American Chemical Society - 1973 to present
b) Society of Sigma Xi - 1976 to present