CURRICULUM VITAE

Raphael G. Raptis (ORCID: 0000-0002-9522-0369)
https://case.fiu.edu/about/directory/profiles/raptis-raphael.html

Department of Chemistry
Florida International University
11200 SW 8 Street – VH203
Miami, FL 33199-0001

e-mail: rraptis@fiu.edu
tel: (305) 348-7529
fax: (305) 348-3772

Personal:
Citizenship: Greek, U.S.A.

Education:

-Ph.D. Chemistry	Texas A&M University (with J. P. Fackler, Jr.†)	Dec. 1988
-M.S. Chemistry	University of Texas at El Paso (with K. H. Pannell)	Aug. 1984
-B.S. Chemistry	Aristotle University of Thessaloniki, Greece.	Feb. 1981

Employment:

-Florida International Univ.	8/13-present	Professor
-Univ. of Puerto Rico	7/04-8/13	Professor
-Univ. of Puerto Rico	7/99-6/04	Associate Professor
-Univ. of Puerto Rico	8/98-6/99	Assistant Professor
-Univ. of Texas, El Paso	8/97-6/98	Visiting Professor
-University of Crete, Greece	4/93-8/97	Assistant Professor
-Research School of Chemistry Australian National University	1/92-3/93	Research Fellow
-Research School of Chemistry Australian National University	9/90-12/91	Postdoctoral Fellow with Dr. Graham A. Heath
-Texas A&M University	2/89-8/89	Postdoctoral Associate with Prof. John P. Fackler, Jr.†

Other Experience:

-FIU	8/16-5/17	Howard Hughes Medical Institute Faculty Scholar
-Univ. of Puerto Rico	8/98-8/13	Director, single crystal X-ray diffraction facility.
-Australian Nat. Univ.	11/96-4/97	Visiting Fellow.
-Australian Nat. Univ.	1/91-2/92	Coordinator of Inorganic Chemistry Seminar Series.
-Greek Navy	9/88-1/89 and 10/89-6/90	Compulsory Military Service, Navy Chemistry Laboratories (Salamis, Greece).
-Texas A&M Univ.	9/84-12/84	Chemical Oceanography.

Professional Organizations:
American Chemical Society, since 1986.
American Association for the Advancement of Science, since 2000.
Society for Biological Inorganic Chemistry, since 2005.
Chairman (2009) Puerto Rico section of the American Chemical Society.
Director, FIU-ACS Bridge Partner Program, 2023-present.

Current Research Interests:
- Study of metal center cooperation in polynuclear systems: Catalysis (small molecule activation), electronic structure, redox properties (electron transfer, mixed-valence), magnetic exchange.
- Functional materials based on polynuclear, redox-active units: Multi-electron acceptors for solar energy conversion, redox-operated porous gas sorbents.
- Bioinorganic and biomedical aspects of polynuclear complex chemistry: Metalloprotein models, MRI contrast agents, bio-inspired catalysts.
- X-ray crystallography, spectroscopy, electrochemistry, spectroelectrochemistry, pyrazole coordination chemistry.

Funding History:
- **SRNS** (800002125), 03/07/25-03/06/26 $280,000
  "*Iron/Technetium Pyrazolate Precursors for Oxide Wasteforms*"
- **SRNS** (0000601800), 01/31/23-09/15/24 $265,000
  "*Iron/Technetium Pyrazolate Precursors for Oxide Wasteforms*"
- **Celma Mastry Foundation**, 11/01/22-10/31/2024 $10,000
  "Synthesis & Optimization of an Iron-Based, Targeted MRI Contrast Agent Platform"
- **NSF-DMR** (2122078), -07/01/21-06/30/27 (Co-PI) Raptis portion: $244,260/$3,780,000
  "NSF-PREM IMPAQT: FIU-2D Crystal Consortium Partnership for Research and Education in Materials"
- **SRNS** (0000525181), 2/28/21-2/27/22 (Co-PI) Raptis portion: $10,000
  "Highly-Lipophilic Sulfonamide Extractants and Analogs for Application in Combined Cesium, Strontium, and Actinide Separations in HLW"
- **SRNS** (0000402067), 1/25/19-11/24/20 (2 Co-PIs) $690,687
  "Development of Separations Methods to Address the Challenge of Organic Mercury in Tank Waste"
- **SRNL** (0000403071**)**, 9/30/16-6/30/19 (Co-PI) Raptis portion: $150,000
  "Development of Alternative Solvent Extraction Technology for Alkaline and Actinides Separation for High-Level Radioactive Waste Treatment"
- **SRNL** (0000272357**)**, 9/30/16-6/30/19 (Co-PI) Raptis portion: $150,000
  "Development of Alternative Solvent Extraction Technology for Alkaline and Actinides Separation for High-Level Radioactive Waste Treatment"
- **SRNL** (0000217393**)**, 7/30/15-12/31/16 (Co-PI) Raptis portion: $50,000
  "Development of Alternative Solvent Extraction Technology for Alkaline High-Level Radioactive Waste Treatment at the Savannah River Site"
- **NSF** (CHE-1213683), 9/1/13-8/31/16 $400,839
"Copper-Based Water-Oxidation Electrocatalysts; Design, Synthesis and Characterization"
- **NSF** (CHE-1445803), 9/1/14-8/31/16 $20,000
  Supplement to "Copper-Based Water-Oxidation Electrocatalysts; Design, etc."
- **NASA-EPSCoR** (NNX13AD38A), 12/26/12-12/25/15 (w. 2 Co-PIs) $1.125 M
  "Carbon Dioxide Storage and Sustained Delivery by Porous Pillar-Layered Structure Coordination Polymers and Metal Organic Frameworks"
- **ACS-PRF** (# 51962-ND3), 1/1/12-8/31/14 $100,000
  "Synthesis and Characterization of Dyads Capable of Achieving Photoexcited Two-Electron Charge-Separated States"
- **NASA-EPSCoR** (NNX09AV05A), 9/1/09-8/31/12 (PI w. 2 Co-PIs) $1.5 M

"A Combined Experimental and Theoretical Approach for the Development of Selective Nanoporous Gas Sorbents for the Effective Restoration of Breathing Air in Crewed Space Craft"

- **NIH-NCI** (U54CA096297), 10/1/08-9/30/10 (Co-PI w. Klostergaard) $360,000
  "Synthesis and Pre-Clinical Evaluation of Targeted, Iron-Based Contrast Agents to Enhance Ovarian Cancer Detection and Treatment Scheduling"
- **NASA-URC** (NNX08BA48A), 01/09-12/14 (Co-PI with 11 others); $5 M
  "Center for Advanced Nanoscale Materials"
- **NSF-ICC** (CHE-0822600), 09/01/08-08/31/11 $390,000

"A Combined Experimental and Theoretical Study of Redox-Active Fe_4O_4 Cubanes"

- **NSF-CREST** (HRD-0833112), 09/01/08-08/31/13 (Co-PI w. 14 others) $5 M
  "Center for Engineered Nanomaterials at the University of Puerto Rico"
- **NSF-DDEP** (CHE-0827841), 07/01/08-06/30/10 $11,100
  "Mössbauer Spectroscopic Studies of Redox-Active Fe_4O_4 Cubanes"
- **NASA-EPSCoR** (07-EPSCoR-0020), 09/01/07-08/31/10 (Co-PI w. 4 others) $750,000
  "Space Exploration Enabling Power Systems: Partnership to Develop the Fundamental Nanoscience at UPR and Perform the Corresponding Proof-Of-Concept at NASA GRC"
- **Fondos Institucionales Para Investigación** (UPR), 8/07-6/08 $18,000
  "Redox-Controlled Sorbents Based on Oligonuclear Copper Clusters"
- **NASA-Space Grant**, (NNG05GG78H) 5/1/07-4/30/08 $60,000
  "Redox-Controlled Sorbents"
- **NIH-NCI-U54** (CA096297), 11/05-7/08 (Co-PI with 2 others) $300,000
  "Synthesis and Pre-Clinical Evaluation of Targeted, Iron-Based Contrast Agents to Enhance Ovarian Cancer Detection and Treatment Scheduling"
- **SCoRE-NIH** (S06GM008102), 7/04-6/08 $487,772
  "Development of Octanuclear Iron Clusters as MRI Contrast Agents"
- **NASA-URC** (NCC3-1034), 01/03-12/07 (Co-PI with 9 others); $6 M
  "Center for Nanoscale Materials"
- **SCoRE-NIH**, 1/02-6/04 $343,000
  "Development of Octanuclear Iron Clusters as MRI Contrast Agents"
- **Fondos Institucionales Para Investigación** (UPR), 8/02-6/04 $26,368
  "Synthesis and Functionalization of Octanuclear Iron Clusters as Redox-Active Secondary Building Units of Three-Dimensional Open Frameworks"
- **EPSCoR-DOD**, 4/00-3/03 $40,000
  "Custom Design of CO-Tolerant Catalysts for Direct Methanol Fuel Cells by Subnanostructuring"
- **NSF-CRIF** (CHE-9982016), 1/00 $60,000
  "Purchase of UV/Vis/NIR-Spectroelectrochemistry Apparatus for the Study of Metal/Sulfur/Clusters".
- **Fondos Institucionales Para Investigación** (UPR), 8/99-5/02 $30,900
  "Water Activation by Copper-Pyrazolato Complexes"
- **EPSCoR-NSF**, 7/99-6/01 $120,000
  "Development of Trinuclear Copper Complexes as Water-Activating Catalysts"
- **EPSCoR-DOE**, 7/99-6/00 $60,000
  "Redox-Active Three-Dimensional Lattices"

Teaching Experience:

Undergraduate courses

At FIU: Basic Inorganic Chem. (CHM 3610), Advanced Inorganic Chemistry (CHM4611), Advanced Inorganic Chemistry Laboratory (CHM4611L).

At the UPR: General Chem. (CHEM 3001, 3002), Inorg. Chem. (CHEM 4000).

At the Univ. of Texas, El Paso: Intro to Organic Chemistry (CHEM 3324 and 4108).

At the Univ. of Crete: senior Inorganic Chemistry.

Graduate courses

At FIU: Symmetry and Group Theory (CHM 5540), X-ray Crystallography (CHM 5590), Physical Inorganic Chemistry (CHM 5650), Advanced Inorganic Chemistry (CHM5620).

At UPR: Inorganic Chemistry (CHEM 6011 and 6012), Special Topics: Symmetry and Group Theory (CHEM 8990), Special Topics: X-ray Crystallography (CHEM 8990), Special Topics: Advanced Spectroscopy (CHEM 8990).

At the Univ. of Crete: Organometallic Chemistry.

University Work:

Academic Affairs Committee, UPR-Chemistry Dept., Aug. 2000 – July 2001.

Dean of Natural Sciences-UPR Search Committee, Nov. 2003 – April 2004.

Dean of Natural Sciences-UPR Search Committee, Oct. 2004 – May 2005.

Personnel Committee, UPR-Chemistry Dept., Sept. 2005 – Aug. 2006, Sept. 2009 – Aug. 2013.

Group Leader, UPR-Institute for Functional Nanomaterials, 2007 – 2010.

Instrumentation Committee, FIU-Chemistry Dept., 2013-2014, 2016-present (Chair, 2016-23).

Recruiting Committee, FIU-Chemistry Dept., 2013-2014, 2014-2017 (Chair).

Graduate Committee, FIU-Chemistry Dept., 2014-present.

Faculty Advisor, American Chemical Society at FIU, 2025-present

Degrees Awarded:

Gellert Mezei, Ph.D. UPR, May **2004**. Prof., Chemistry Dept., Western Michigan University, Kalamazoo, MI.

Angel R. Martínez Subero, M.S. UPR, October **2004**. *Accupharma Inc*., Humacao, PR.

Marlyn Rivera Carillo, Ph.D. UPR, May **2008**. *Pfizer*, Carolina, Puerto Rico.

Rubenier Montano, M.S. UPR, December **2008**. Instructor, UPR-Chemistry, San Juan, PR.

Dalice Piñero Cruz, Ph.D. UPR, June **2009**. Assist. Prof., Chemistry Dept. UPR.

Soma Das, Ph.D. UPR April **2012**.

Idaliz Rodríguez-Escudero, M.S. UPR, May **2012**. Ph.D., UPR-Pharmacy, 2018.

Karilys González-Nieves, Ph.D. UPR, May **2013**. Assist. Prof. and Chair, UPR-Carolina, Carolina, PR.

Logesh Mathivathanan, Ph.D. UPR, July **2013**. Postdoc, FIU, Miami, FL.

Lizmarie Rivera-Millán, Ph.D. UPR, August **2013**. Assist. Prof., UPR-Cayey, Cayey, PR.

Kenia Parga-Rivera, Ph.D. UPR, August **2013**. Assist. Prof., Interamerican Univ., San Juan, PR.

Alan J. Rodríguez-Santiago, Ph.D. FIU, July **2018**. Assist. Prof., Miami-Dade College, Homestead, FL.

Kaige Shi, Ph.D. FIU, December **2018**. Assoc. Prof., Zhengzhou Normal Univ., Zhengzhou, China.

Jessica M. López-Plá, Ph.D. FIU, December **2018**. Information Scientist, Chemical Abstracts Services (CAS), Columbus, OH.
Shambhu Kandel, Ph.D. FIU, May **2019**. Postdoctoral Fellow, Advanced Research Center, FIU, Miami, FL.
David I. Kreiger, Ph.D, FIU, August **2019**. Process Development Chemist, Johnson Matthey, West Deptford, NJ.
Konstantinos A. Lazarou, Ph.D., FIU, August **2019**. Postdoctoral Fellow, Univ. of Oregon, Eugene, OR.
Susana Herrera, Ph.D., FIU, August **2023**. Physical Scientist, NNSA-DOE, Washington, DC.
Eduardo Mollinedo, Ph.D., FIU, August **2023**. Postdoctoral Fellow, Savannah River National Laboratory, Aiken, SC.
Kelly L. Rue, Ph.D., FIU, August **2023**. Postdoctoral Fellow, Pacific Northwest National Laboratory, Richland, WA.
Zhi-Chun Shi, Ph.D. FIU, April **2024**. Postdoctoral Fellow, Virginia Technological University, Blacksburg, VA.

Postdoctoral Advisees:
1. Dr. Peter Baran (2000-2004); Prof., Juniata College, PA.
2. Dr. Guang Yang (2001-2004); Prof., Zhengzhou Univ., Zhengzhou, China
3. Dr. Hong Zhao (2005-2007); Associate Prof., Nanjing Institute of Chem., Nanjing, China.
4. Dr. Charalampos Miras (2006); Research Scientist, Univ. of Glasgow, UK.
5. Dr. Indranil Chakraborty (2005-2010, 2017-2019); Postdoctoral Fellow, Univ. California, Santa Cruz.
6. Dr. Suresh Palaniswamy (2010); Assoc. Prof., Madurai Kamaraj Univ., India.
7. Xin-Yi Cao (2010-2015); Postdoctoral Fellow, Sun Yat-Sen Univ., China.
8. Evgen Govor (2011-2015); Postdoctoral Fellow, FIU.
8. Logesh Mathivathanan (2014-2020); Assist. Prof., Gandhi Institute of Technology and Management (GITAM), Visakhapatnam, India.
9. Athanasios Boudalis (2015-2016); Marie Curie postdoctoral fellow, Univ. Strasbourg, France.
10. Islam Hussein (2023-2024); Postdoctoral Fellow, FIU (with K. Kavvallieratos).

Patents:
1. Raphael G. Raptis, "Metal Based Cubane Structure Contained in an Octanuclear Complex Stable Over Several Oxidation States and a Method of Producing the Same", *US 6,596,259 B1* (July 22, **2003**).
2. Raphael G. Raptis and Peter Baran, "Substituted Octanuclear Pyrazolato Clusters with Electron Transfer and MRI Contrast Agent Properties", *US 7,052,677 B1* (May 30, **2006**).
3. Raphael G. Raptis and Ricardo González Méndez, "Iron-Based Contrast Agent", *US 7,807,137* (October 5, **2010**).
4. Raphael G. Raptis, Indranil Chakraborty and Shambhu Kandel, "Synthesis and Antimicrobial Uses of Dinuclear Silver(I) Pyrazolates", *US 10,828,327* (November 10, **2020**).
5. Raphael G. Raptis, Indranil Chakraborty and Shambhu Kandel, "Synthesis and Antimicrobial Uses of Dinuclear Silver(I) Pyrazolates", *US 11,160,829 B2* (November 2, **2021**).
6. Raphael G. Raptis and Logesh Mathivathanan, "Dinuclear Copper Catalyst for the Oxidation/Oxygenation of Hydrocarbons", *US 11,186,532* (November 30, **2021**).

7. Raphael G. Raptis and Logesh Mathivathanan, "Dinuclear Copper Catalyst for the Oxidation/Oxygenation of Hydrocarbons", *US 11,584,704 B2* (February 21, **2023**).
8. Raphael G. Raptis, Indranil Chakraborty and Shambhu Kandel, "Synthesis and Antimicrobial Uses of Dinuclear Silver(I) Pyrazolates", *US 11,779,598 B2* (October 10, **2023**).
9. Raphael G. Raptis and Logesh Mathivathanan, "Dinuclear Copper Catalyst for the Oxidation/Oxygenation of Hydrocarbons", *US 11,795,129 B2* (October 24, **2023**).
10. Raphael G. Raptis, Indranil Chakraborty and Shambhu Kandel, "Synthesis and Antimicrobial Uses of Dinuclear Silver(I) Pyrazolates", *US 12,251,401* (March 18, **2025**).

Book Chapter:
Chapter 3: "Nanoporous Materials in Atmosphere Revitalization", Jay L. Perry, Arturo J. Hernandz-Maldonado, Yasuyuki Isjikawa, Raphael G. Raptis, Bernadette Luna, Lila Mulloth, Christian Junaedi, Subir Roychoudhury, in Advanced Materials for Aerospace Applications, Carlos R. Cabrera and Felix A. Miranda (Eds.), Pan Stanford Publishing, **2014**, ISBN: 9789814463188.

Publications – h-index, 37 (* identifies RGR as corresponding author):

From Florida International University (FIU):

154*. Jessica M. López-Plá, Mohammed Obies, Georgia Zahariou, Michael Pissas, Yiannis Sanakis, John E. McGrady, Raphael G. Raptis, "Pyrazolate-supported $Cr_3(\mu_3\text{-}O)$ cores; homovalent Cr^{III}_3 and mixed-valent $Cr^{III}_2Cr^{IV}$", *Chem. Commun.*, **2024**, *60*, 14117-14120 (10.1039/D4CC05161K).

153*. Zhi-Chun Shi, Xiaoliang Wang, Vadym Drozd, Raphael G. Raptis, "A Foldable Metal-Organic Framework with cds Topology Assembled via Four-Connected Square-Planar Single Ni^{2+}-Ion Nodes and Linear Bidentate Linkers", *Crystals*, **2024**, *14*, 40 (10.3390/cryst14010040).

152*. Susana Herrera, Masafumi Yoshinaga, Raphael G. Raptis, "Antibacterial properties of nine indium(III) complexes of substituted pyrazoles/pyrazolate and the structural and solution characterization of the *mer*- and *trans*-indium(III) complexes of 4-Me-pzH", *J. Inorg. Biochem.*, **2024**, *250*, 112402 (10.1016/j.jinorgbio.2023.112402).

151*. Kelly L. Rue, Susana Herrera, Indranil Chakraborty, Alexander M. Mebel, Raphael G. Raptis, "Completion of Crystallographic Data for the Series of 4-Halogenated-1*H*-Pyrazoles: Crystal Structure Determination of 4-Iodo-1*H*-Pyrazole and Spectroscopic Comparison", *Crystals*, **2023**, *13*, 1101 (10.3390/cryst13071101).

150*. Zhi-Chun Shi, Fengyu Li, Hong Zhao, Indranil Chakraborty, Zhongfang Chen, Raphael G. Raptis, "Trinuclear and Cyclometallated Organometallic Dinuclear Pt-Pyrazolato Complexes: A Combined Experimental and Theoretical Study", *Chemistry*, **2023**, 5, 187-200 (10.3390/chemistry5010016).

149. Kiara Taibi-Briz, Krish Jayachandran, Raphael G. Raptis, Kateel G. Shetty, "*In vitro* efficacy of fungal endophytes and silver pyrazolate against Raffaelea lauricola, causal agent of laurel wilt of avocado", FIU Undergraduate Research Journal, **2023**, *1(1)*, Article 4 (10.25148/URJ.010323).

148*. Kelly L. Rue, Logesh Mathivathanan, Gellert Mezei, Alexander M. Mebel, Raphael G. Raptis, "Crystal Structure, Hirshfeld Analysis, and DFT Calculations of Three Trinuclear Cu(II) Polymorphs", *Crystals*, **2022**, *12*, 1611

(10.3390/cryst12111611).

147. Arman Hasan, Despoina Varna, Indranil Chakraborty, Panagiotis A. Angaridis, Raphael G. Raptis, "Synthesis, Structure and Antibacterial properties of a Mononuclear Ag(I) Complex, $[Ag(OBz)(PTA)_2]$ (OBz = benzoate, PTA = 1, 3, 5-Triaza-7-phospadamantane)", *Results Chem.*, **2022**, *4*, 100580 (10.1016/j.rechem.2022.100580).

146*. Susana Herrera, Kennett I. Rivero, Alexis Guzmán, Jonathan Cedeño, Jaroslava Miksovska, Raphael G. Raptis, "Mononuclear, hexanuclear and polymeric indium(III) pyrazolido complexes; Structural characterization, dynamic solution studies and luminescent properties", *Dalton Trans*. **2022**, 14277-14286 (10.1039/d2dt01901a).

145*. Kelly L. Rue, Guodong Niu, Jun Li, Raphael G. Raptis, "Crystal Structure Determination and Hirshfeld Analysis of a New Alternariol Packing Polymorph", *Crystals*, **2022**, *12*, 579 (10.3390/cryst12050579).

144*. Kelly L. Rue, Raphael G. Raptis, "Low-temperature crystal structure of 4-chloro-1H-pyrazole", *Acta Crystallogr*. **2021**, *E77*, 955-957.

143. Guodong Niu, Xiaohong Wang, Yue Hao, Shambhu Kandel, Guomin Niu, Raphael G. Raptis, Jun Li, "A novel fungal metabolite inhibits *Plasmodium falcipanum* transmissionand infection", *Parasites Vectors*, **2021**, 14:177 (10.1186/s13071-021-04677-7).

142. Logesh Mathivathanan, Yiannis Sanakis, Raphael G. Raptis, Philippe Turek, Athanassios K. Boudalis, "Observation and deconvolution of a unique EPR signal from two cocrystallized spin triangles", *Phys. Chem. Chem. Phys*. **2021**, *23*, 14415-14421(10.1039/d1cp01965a).

*141. Kelly L. Rue, Jeffrey R. McLachlan, Juliana A. Cazzaniga, Indranil Chakraborty, Christopher J. Dares, Raphael G. Raptis, "Redox-active dinuclear oxorhenium(V) pyrazolate complexes", *Inorg. Chim. Acta*, **2020**, *516*, 120126 (10.1016/j.ica.2020.120126).

*140. Kaige Shi, Logesh Mathivathanan, Radovan Herchel, Athanassios K. Boudalis, and Raphael G. Raptis, "Supramolecular Assemblies of Trinuclear Copper(II)-Pyrazolato Units: A Structural, Magnetic and EPR Study", *Chemistry*, **2020**, *2*, 626-644 (10.3390/chemistry2030039)

139. Logesh Mathivatanan, Guillaume Rogez, Nadia Ben Amor, Vincent Robert, Raphael G. Raptis, Athanassios K. Boudalis, "Origin of ferromagnetism and magnetic anisotropy in a family of copper(II) triangles", *Chem. Eur. J*., **2020**, *26*, 12769-12784 (10.1002/chem.202001028).

*138. Yiannis Sanakis, Michael Pissas, J. Krzystek, Andrew Ozarowski, Joshua Telser, Raphael G. Raptis, "Ferromagnetically-Coupled, Triangular, $[Bu_4N]_2[Cu^{II}_3(\mu_3\text{-}Br)_2(\mu\text{-}4\text{-}O_2N\text{-}pz)_3Br_3]$ Complex Revisited: The Effect of Capping Halide on Spin Relaxation Properties", *Polyhedron*, **2020**, *177*, 114258 (10.1016/j.poly.2019.114258).

*137. Jessica M. López Plá, Athanassios K. Boudalis, and Raphael G. Raptis, "Chromium(III)-pyrazole complexes. X-Ray crystal structures, ^{1}H NMR investigation of ligand fluxional behavior and EPR studies", *Inorg. Chim. Acta*, **2020**, *502*, 119299 (10.1016/j.ica.2019.119299).

*136. Konstantinos A. Lazarou, Indranil Chakraborty, and Raphael G. Raptis, "Re-investigation of an Octanuclear Iron-Oxo Complex Supported by 4-^{t}Butyl-Pyrazolido Ligands", *Polyhedron* **2019**, *171*, 41-45 (10.1016/j.poly.2019.07.003).

135. Joshua A. Silverman, Logesh Mathivathanan, Evgen V. Govor, Raphael G. Raptis, Konstantinos Kavallieratos, "Coordination Polymers of Cd(II) and Pb(II) with Croconate

Show Remarkable Differences in Coordination Patterns: A Structural and Spectroscopic Study", *Acta Crystallogr*. **2019**, *C57*, 935-940 (10.1107/S2053229619007277).

*134. Kaige Shi, Logesh Mathivathanan, Athanassios K. Boudalis, Philippe Turek, Indranil Chakraborty, Raphael G. Raptis, "Nitrite Reduction by Trinuclear Copper Pyrazolate Complexes: Catalytic, Synthetic Polynuclear NO Releasing Systems", *Inorg. Chem*. **2019**, *58*, 7537-7544 (10.1021/acs.inorgchem.9b00748).

*133. David I. Kreiger, Logesh Mathivathanan and Raphael G. Raptis, "First examples of catenation through strong Cu-aldehyde bonds; metal-organic frameworks based on pyrazole-4-carboxaldehyde-containing Cu_3N_6 metallacycles as building units", *Cryst. Eng. Commun*. **2019**, *21*, 3047-3055 (10.1039/c9ce00421a).

*132. Shambhu Kandel, Veerasamy Sathish, Logesh Mathivathanan, Alexander N. Morozov, Alexander M. Mebel,[a] Raphael G. Raptis, "Aggregation Induced Emission Enhancement (AIEE) of Tripodal Pyrazole Derivatives for Sensing of Nitroaromatics; Vapor Phase Detection of Picric Acid", *New J. Chem*. **2019**, *43*, 7251-7258 (10.1039/c9nj00166b).

*131. Konstantinos A. Lazarou, Karilys González-Nieves, Indranil Chakraborty, Raphael G. Raptis, "Spontaneous Resolution by Crystallization of an Octanuclear Iron(III) Complex Using Only Racemic Reagents", *Angew. Chem. Int. Ed*. **2019**, *58*, 7324-7328 (10.1002/anie.201901877).

*130. Kaige Shi, Logesh Mathivathanan, Vadym Drozd, Raphael G. Raptis, "Three 1D- and 2D-coordination polymer topological isomers of trinuclear copper pyrazolate SBUs and 4,4'-trimethylenedipyridine linkers; Effect of pressure on the 3D structures", *Cryst. Growth Des*. **2019**, *19*, 381-390 (10.1021/acs.cgd.8b01482). Highlighted in *Advances in Engineering*, https://advanceseng.com/coordination-polymers-under-pressure/

*129. Shambhu Kandel, Jenny Stenger-Smith, Indranil Chakraborty, Raphael G. Raptis, "Syntheses and X-ray crystal structures of a family of dinuclear silver(I)pyrazolates: Assessment of their antibacterial efficacy against *P. aeruginosa* with a soft tissue and skin infection model", *Polyhedron* **2018**, *154,* 390-397 (10.1016/j.poly.2018.08.015).

*128. Soma Das, Kenia Parga, Indranil Chakraborty, Arthur D. Tinoco, Yamixa Delgado, Paola M. López, Yiannis Sanakis, Shuken Ghosh, Jim Bankson, Jim Klostergaard, Ricardo González-Méndez, Raphael G. Raptis, "Octanuclear iron-oxo clusters enhance contrast in magnetic resonance imaging *in vitro* and *in vivo*", *J. Inorg. Biochem*. **2018**, *186*, 176-186 (10.1016/j.jinorgbio.2018.06.005).

*127. Logesh Mathivathanan, Athanassios K. Boudalis, Philippe Turek, Michael Pissas, Yiannis Sanakis, Raphael G. Raptis, "Interactions between H-bonded $[Cu^{II}_3(\mu_3\text{-OH})]$triangles; A Magnetic Susceptibilty and EPR study", *Phys. Chem. Chem. Phys*. **2018**, *20*, 17234-17244 (10.1039/c8cp02643b)

*126. Alan J. Rodríguez-Santiago, Nicole Cortés, Khoa Pham, Jaroslava Miksovska, Raphael G. Raptis, "4,4'-Dihydroxypyridine Complexes of Co(III), Cu(II) and Zn(II); Structural and spectroscopic Characterization", *Polyhedron* **2018**, *150,* 61-68 (10.1016/j.poly.2018.04.039).

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*42. Guang Yang, Raphael G. Raptis, "Synthesis, structure and properties of tetrameric gold(I) 3,5-di-*tert*-butyl-pyrazolate", *Inorg. Chim. Acta* **2003**, *352*, 98-104, (issue dedicated to Prof. Martin A. Bennett).
41. Peter Baran, Raphael G. Raptis, Abimael D. Rodríguez, Ileana I. Rodríguez, Yan-Ping Shi, "Structural Characterization of Elisabatin B and Elisabatin C", *J. Chem. Crystallogr*. **2003**, *33*, 711-718 (doi: 10.1023/A:1025349727512).
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39. Jeffrey Marrero, Abimael D. Rodríguez, Peter Baran, Raphael G. Raptis, "Isolation and Structure of Providencin: A Highly Oxygenated Diterpene Possessing a Unique Bicyclo[12.2.0]hexadecane Ring System from the Sea Plume *Pseudopterogorgia kallos*", *Org. Lett*. **2003**, *5*, 2551-2558 (doi: 10.1021/ol034854a).
38. Jeffrey Marrero, Abimael D. Rodríguez, Peter Baran, Raphael G. Raptis, "Isolation and Cheracterization of Kallosin A, a Novel Rearranged Pseudopterane Diterpenoid from the Carribean Sea Plume *Pseudopterogorgia kallos* (Bielschowsky)", *J. Org. Chem*. **2003**, *68*, 4977-4979 (doi: 10.1021/jo0343329).
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From the University of Crete:
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*30. Silvia Cortez, Raphael G. Raptis, "Silver 1994", *Coord. Chem. Rev.* **1997**, *162*, 495-538.
29. Lai Yoong Goh, Meng S. Tay, Ekkehard Sinn, Raphael G. Raptis, "Variable Temperatrure NMR Study and Reductively-Induced Isomerization and Degradation of $[CpCr(CO)_2(\mu\text{-}SPh)]_2$. Crystal Structure of $Cp_2Co[CpCr(SPh)_3]$", *J. Organomet. Chem*. **1996**, *524*, 31-40.

Postdoctoral Work Publications:
28. John Baldas, Graham A. Heath, Stuart A. Macgregor, Klauss H. Moock, Sandra C. Nissen, Raphael G. Raptis, "Spectro-electrochemical and Computational Studies of Tetrachloro and Tetrabromo Oxo-and Nitrido-Technetate(V) and their Tc(VI) Counterparts", *Dalton Trans*. **1998**, 2303-2314.
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24. Stephen F. Gheller, Graham A. Heath, Raphael G. Raptis, "The Redox Chemistry of $(n\text{-}Bu_4N)_2[Os_2Cl_8]$; Low Temperature Spectro-electrochemical Characterization of $[Os_2Cl_8]^{1-}$, and Voltammetric Evidence for $[Os_2Cl_8]^{0}$", *J. Am. Chem. Soc.* **1992**, *114*, 7924-7926.

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Graduate Work Publications:

21. John P. Fackler, Jr., Esperanza Galarza, Guillermo Garzón, Anthony M. Mazany, H. H. Murray, Manal A. R. Omary, Raphael G. Raptis, Richard J. Staples, Werner E. Van Zyl, Suning Wang, "The Diphenylenethiophosphinate (MTP) Ligand in Gold(I), Platinum(II), Lead(II),Thallium(I), and Mercury(II) Complexes, sym-$Au_2(MTP)_2$, [PPN][AU$(MTP)_2$], $Au_2Pt(MTP)_4$, $Au_2Pb(MTP)_4$, $AuTl(MTP)_2$, $Hg(MTP)_2$, $Hg(MTP)_2(AuCl)_2$, and $Hg^{II}Au^{I}(MTP)_2Au^{III}Cl_4$", *Inorg. Synth*. **2002**, *33*, 171.
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1. Raphael G. Raptis, Henry H. Murray III, John P. Fackler, Jr., "The Synthesis and Crystal Structure of a Novel Gold(I)-Pyrazolate Hexamer Containing an 18-Membered Inorganic Ring", *Chem. Commun*. **1987**, 737.

Conference Presentations (since 2001):

- "A new look at the "Verwey transition" of magnetite", 4th Conference on Molecular Magnetism in North America (MAGNA 2025), Tallahassee, FL, Feb 28- Mar. 3, **2025**.
- "Mixed-valent octanuclear iron oxide complexes and a fresh look at the "Verwey transition", Innovations in Chemical Sciences-2020, Vellore Institute of Technology, Chennai, India, Virtual Conference, August 21-22, **2020**.
- "Trinuclear, basic metal pyrazolates; Redox activity and electronic structure", Current Trends in Molecular and Nanoscale Magnetism (CTMNM 2019), Rhodes, Greece, May 27-31, **2019**.
- "Trinuclear, basic metal pyrazolates; Redox activity and electronic structure", National Meeting of the American Chemical Society, Orlando, FL, Mar 31-Apr. 4, **2019**.

- "Nitrite reduction by trinuclear copper pyrazolate complexes: First examples of a synthetic, polynuclear, NO-releasing, homogeneous catalyst", Southeast Regional Meeting of the American Chemical Society, Augusta, GA, Oct 31-Nov. 3, **2018**.
- "Easily Accessible Cu(III) in Trinuclear and Hexanuclear Pyrazolato Complexes; Spectroscopic and Reactivity Studies", American Chemical Society-Florida Annual Meeting and Exposition, Palm Harbor, FL, May 7-9, **2016**.
- "Redox-Active Iron-Oxo Complexes Containing Fe_4O_4-Cubanes", American Chemical Society-Florida Annual Meeting and Exposition, Palm Harbor, FL, May 5-7, **2015**.
- "Spin-Glass Behavior of a Hierarchically-Organized, Hybrid Microporous Material, Based on an Extended Framework of Octanuclear Iron-Oxo Units", 5th Workshop on Current Trends in Molecular and Nanoscale Magnetism (CTMNM 2014), Larnaca, Cyprus, May 26-29, **2014**.
- "Mixed-valent octanuclear iron oxide complexes and a fresh look at the "Verwey transition", 5th North America-Greece-Cyprus Workshop on Paramagnetic Materials (NAGC 2013), Limassol, Cyprus, May 21-26, **2013**.
- "Mixed-valent octanuclear iron oxide complexes and a fresh look at the "Verwey transition", 244th National Meeting of the American Chemical Society, Philadelphia, PA, August 19-23, **2012**.
- "*Octanuclear, Mixed-Valent, Pyrazolato Complexes, Containing Fe_4O_4-Cubanes*", 43rd IUPAC meeting, San Juan, PR, July 31- August 5, **2011**.
- "*Iron Cluster-Based Magnetic Resonance Imaging (MRI) Contrast Agents*", 4th North America-Greece-Cypus Workshop on Paramagnetic Materials (NAGC 2011), Patras, Greece, June 14-18, **2011**.
- "*Octanuclear, Mixed-Valent, Pyrazolato Complexes, Containing Fe_4O_4-Cubanes*", 3rd Workshop on Current Trends in Molecular and Nanoscale Magnetism (CTMNM 2010), Orlando, FL, June 21-25, **2010**.
- "*Redox-Active Octanuclear Complexes Containing Fe_4O_4-Cubanes*", 65th South West Regional Meeting of the American Chemical Society, El Paso, TX, November 4-7, **2009**.
- "*Trinuclear and hexanuclear mixed-valent Cu-pyrazolato complexes*", 3rd North America-Greece-Cypus Workshop on Paramagnetic Materials, Protaras, Cyprus, June 15-19, **2009**.
- "*Trinuclear and hexanuclear mixed-valent Cu-pyrazolato complexes*", 2nd Zing Conference on Coordination Chemistry, Antigua, March 15-18, **2009**.
- "*Redox-Active Fe_4O_4 Cubanes*", Current Trends in Nanoscopic and Mesoscopic Magnetism, Delphi, Greece, Sept. 1-5, **2008**.
- "*Redox-Active Fe_4O_4 Cubanes*", Zing Conference on Coordination Chemistry, Cancún, Mexico, March 6-9, **2008**.
- "*A Redox-Active Fe_4O_4-cubane as a Possible Protein Active Center*", Southwest Regional Meeting of the American Chemical Society, Lubbock, TX, Nov. 4-7, **2007.**
- "*Polynuclear Iron-Oxo-Pyrazolate Clusters; Possible Metalloprotein Models and MRI Contrast Agents*", Recent Advances in Chemistry: 2nd International Workshop Colima, University of Colima, Colima, Mexico, Oct. 17-19, **2007** (invited lecture).
- "*A Redox-Active Fe_4O_4-cubane as a Possible Protein Active Center*", Southeast Regional Meeting of the American Chemical Society, Augusta, GA, Nov. 1-4, **2006.**
- "*New Iron-Based MRI Contrast Agents*", Southwest Regional Meeting of the American Chemical Society, Houston, TX, Oct. 18- 21, **2006.**
- "*Exploring the Metal Carboxylate-Pyrazolate Structural Parallel*", Southwest Regional Meeting of the American Chemical Society, Fort Worth, TX, Sept. 29-Oct. 2, **2004** (Symposium in honor of Prof. J. P. Fackler, Jr.).

- "*Exploring the Metal Carboxylate-Pyrazolate Structural Parallel*", 227th National Meeting of the American Chemical Society, Anaheim, CA, March 28 – April 1, **2004**.
- "*Polynuclear Copper(II)-Pyrazolato Complexes. From Trimers to Tetradecamers*"
7th International Symposium on Applied Bioinorganic Chemistry, Guanajuato, Mexico, April 1-5, **2003**. Plenary lecture.
- "*Polynuclear Transition Metal Pyrazolato Complexes: From Trimers to Tetradecamers, so Far*", 221st National Meeting of the American Chemical Society, San Francisco, CA, April 1-5, **2001**.
- "*Polynuclear Transition Metal Pyrazolato Complexes: From Trimers to Tetradecamers, so Far*", VII Encuentro de Química Inorganica, Valdivia, Chile, January 10-12, **2001**.

Seminars and Invited Talks (since 2001):
- NCSR "*Demokritos*", Institute for Nanoscience & Nanotechnology, Ag. Paraskeui, Greece, Nov. 11, **2022**.
- University of Central Florida, Dept. of Chemistry, Orlando, FL, Oct. 14, **2019**.
- University of Texas at El Paso, Dept. of Chemistry, El Paso, TX, May 3, **2019**.
- Aristotle University of Thessaloniki, Dept. of Chemistry, Thessaloniki, Greece, Oct. 16, **2017**.
- University of Ioannina, Department of Chemistry, Ioannina, Greece, Oct. 13, **2017**.
- National Kapodistrian University of Athens, Dept. of Chemistry, Athens, Greece, Oct. 11, **2017**.
- University of Patras, Department of Chemistry, Patras, Greece, Oct. 10, **2017**.
- University of Texas at Arlington, Department of Chemistry, Arlington, TX, Nov. 4, **2016**.
- Florida Gulf Coast University, Department of Chemistry, Ft. Myers, FL, Nov. 2, **2015**.
- Nova Southeastern University, Department of Chemistry, Hollywood, FL, April 22, **2015**.
- Florida Memorial University, Miami Shores, FL, April 7, **2015**.
- University of North Florida, Department of Chemistry, Jacksonville, FL, Feb. 6, **2015**.
- University of Miami, Department of Chemistry, Miami, FL, Sept. 19, **2014**.
- Florida International University, Department of Physics, Miami, FL, August 29, **2014**.
- Florida Atlantic University, Department of Chemistry, Boca Raton, FL, Feb. 14, **2014**.
- University of Texas at El Paso, Department of Chemistry, El Paso, TX, April 7, **2011**.
- Florida International University, Department of Chemistry, Miami, FL, April 4, **2011**.
- Florida State University, Department of Chemistry, Tallahassee, FL, Nov. 2, **2010**.
- University of Florida, Department of Chemistry, Gainesville, FL, Nov. 1, **2010**.
- University of Texas at San Antonio, Dept. of Chemistry, San Antonio, TX, Oct. 22, **2010**.
- Texas A&M University, Department of Chemistry, College Station, TX, Oct. 20, **2010**.
- Florida International University, Department of Chemistry, Miami, FL, Sept. 10, **2010**. (invitation by the South Florida section of the American Chemical Society).
- Florida Atlantic University, Department of Chemistry, Boca Raton, FL, Sept. 9, **2010**. (invitation by the South Florida section of the American Chemical Society).
- Clemson University, Department of Chemistry, Clemson, SC, March 1, **2010**.
- University of Kentucky, Department of Chemistry, Lexington, KY, March 27, **2009**.
- University of Louisville, Department of Chemistry, Louisville, KY, March 26, **2009**.
- Western Michigan University, Department of Chemistry, Kalamazoo, MI, October 6, **2008**.
- University of Texas at El Paso, Department of Chemistry, El Paso, TX, November 9, **2007**.
- Juniata College, Department of Chemistry, Huntingdon, PA, April 26, **2007**.
- Drexel University, Department of Chemistry, Philadelphia, PA, April 25, **2007**.
- Syracuse University, Department of Chemistry, Syracuse, NY, April 24, **2007**.
- University of Puerto Rico, Dept. of Chemical Engineering, Mayagüez, PR, February 15, **2007**.

- Univ. of S. Mississippi, Dept. of Chem. and Biochem., Hattiesburg, MS, February 2, **2007**.
- Louisiana State University, Department of Chemistry, Baton Rouge, LA, February 1, **2007**.
- Max-Planck Institute for Bioinorganic Chemistry, Mülheim, Germany, January 20, **2006**.
- Universität Dortmund, Fachbereich Chemie, Dortmund, Germany, January 19, **2006**.
- Universiteit Leiden, Department of Chemistry, Leiden, Netherlands, January 16, **2006**.
- Georg-August Universität, Institute of Inorg. Chem., Göttingen, Germany, January 18, **2006**.
- University of Miami, Department of Chemistry, Coral Gables, FL, April 18, **2005**.
- Purdue University, Department of Chemistry, West Lafayette, IN, December 1, **2004**.
- University of Illinois-Urbana, Dept. of Chemistry, Urbana-Champaign, IL, November 30, **2004**.
- University of California-Davis, Department of Chemistry, Davis, CA, October 29, **2003**.
- University of California-Irvine, Department of Chemistry, Irvine, CA, October 27, **2003**.
- University of California-San Diego, Dept. of Chemistry, San Diego, CA, October 24, **2003**.
- Universität Münster, Department of Inorganic Chemistry, Münster, Germany, July 24, **2003**.
- Universität Münster, Department of Inorganic Chemistry, Münster, Germany, July 23, **2003**.
- Technical Univ. of Munich, Dept. of Inorganic Chemistry, Munich, Germany, July 21, **2003**.
- University of Michigan, Department of Chemistry, Ann Arbor, MI, December 17, **2002**.
- University of Patras, Department of Chemistry, Patras, Greece, March 27, **2002**.
- University of Texas at El Paso, Department of Chemistry, El Paso, January 28, **2002**.
- Texas A&M University, Department of Chemistry, College Station; November 5, **2001**.
- Ohio State University, Department of Chemistry, Colombus, October 17, **2001**.