

2025 Carbon Microelectromechanical Systems conference (C-MEMS 2025) Schedule and Program

Date: January 13-14, 2025, 8:00 AM – 5:00 PM

Location: Shalala Center, University of Miami, Coral Gables, Florida, USA

Conference website: <https://mds.coe.miami.edu/c-mems-conference/index.html>

Zoom link for remote participants:

<https://miami.zoom.us/j/99164091404?pwd=kjZxyw09VcEeyXk0gm8EgBtv6ZaHCX.1>

Meeting ID: 991 6409 1404

Passcode: 570682

Note to speakers, please send in your presentations by January 12, 2025, 5:00 pm Eastern Standard Time. Coffee/Tea/Water will be available throughout the event at the conference venue.

Day 0, January 12, 2025 – Networking event

6:30 pm – 8:30 pm	Young professionals/Early Career Researchers networking event Venue: College of Engineering, 1251 Memorial Dr., Coral Gables, FL 33146
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Day 1, January 13, 2025

8:00 am - 8:40 am	Registration, continental breakfast, and coffee, Shalala Center Ballroom East, 3 rd floor
8:40 am - 9:00 am	Welcome from conference chair Dr. Chunlei Wang and Dean Biswas
9:00 am- 9:45 am	Featured talk: A powerful, Novel Electrochemical Transistor: The 3D Carbon Redox Amplifier (Speaker: Dr. Marc Madou, UC Irvine)
9:45 am - 10:00 am	Welcome from NSF Office of International Science & Engineering (Dr. Kara C. Hoover, Program Director Office of International Science and Engineering (OISE))
10:00 am -10:30 am	OptoElectrical Devices for Therapy and Modelling of Parkinson’s Disease (Speaker: Dr. Jenny Emnéus, Technical University of Denmark)
10:30 am - 10:40 am	Coffee break
10:40 am - 11:05 am	Carbon Nanotube Network Metamaterials for Applications (Speaker: Dr. Hiroshi Furuta, Kochi University of Technology)
11:05 am -11:30 am	Unified Charge Control Model for Nanoscale Graphene Transistors (Speaker: Dr. Michael Shur, Rensselaer Polytechnic Institute)
11:30 am - 11:55 am	C-MEMS and Broadening Carbon Ring (Speaker: Dr. Chunlei Wang, University of Miami)
11:55 am - 1:30 pm	Lunch (Centennial Village Dining Hall) and Networking (See map in attachment)
1:30 pm - 2:00 pm	Integration of pyrolytic carbon electrodes in photovoltaic retinal implants (Speaker: Dr. Stephan Sylvest Keller, Technical University of Denmark)
2:00 pm - 2:30 pm	Inkjet-Printed PEDOT-Derived Electrodes for Sensing Applications (Speaker: Dr. Adriana Hernandez, Universidad Nacional Autónoma de México)
2:30 pm - 3:00 pm	Carbon nanoelectrode for single-entity detection and analysis (Speaker: Dr. Jin He, Florida International University)
3:00 pm – 3:30 pm	Expanding the carbon toolbox beyond C-MEMS (Speaker: Dr. Rodrigo Martinez-Duarte, Clemson University)
3:30 pm - 4:30 pm	Poster presentation session, Shalala Center, 3 rd floor (Posters will stay up for the duration of the conference)

5:00 pm - 7:00 pm	Cultural immersion and banquet, Frost Institute for Chemical and Molecular Science, 1201 Memorial Dr, Coral Gables, FL 33146
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January 13, 2025 – List of poster presentations

Poster 1	Computational Investigation of Metal-Halide Clusters as Building Blocks for Hybrid Perovskites in Photocatalysis and Photovoltaic Applications (Presenter: Ariel Sharon Asare, International Center for Theoretical Physics)
Poster 2	Optimizing 3D Printing and Thermolysis of Resins for High-Performance Carbon Microstructures in C-MEMS Applications (Presenter: Felix Wimmer, Clemson University)
Poster 3	Artificial Intelligence-Driven Approaches for Battery State Estimation (Presenter: Kepei Miao, University of Miami)
Poster 4	Investigating the impact of acid hydrolysis on the properties of bacterial cellulose nanocrystals for carbonization (Presenter: Manasi Shah, Clemson University)
Poster 5	Leveraging Biochar for Net-Zero Carbon Asphalt Pavements: Advanced Carbon Material Applications for Sustainable Infrastructure (Presenter: Dr. Meili Liu, University of Miami)
Poster 6	Effect of Dielectric Barrier Discharge Plasma Treatment on Polytetrafluoroethylene (PTFE) Surface Chemical Composition (Presenter: Vijay Paharia, Florida International University)
Poster 7	Wafer scale pyrolytic carbon nanogap electrodes for electrochemical sensing (Presenter: Nicolai Støvrig, Technical University of Denmark)
Poster 8	Investigation of a Glassy Carbon BioFET for the Detection of Analytes: Case of Glucose (Presenter: Sara Herrera, San Diego State University)
Poster 9	The Effect of Temperature on the Rate of Bipolar Electrochemical Reactions - Performance in Capacitors (Presenter: Colin Brady, University of Miami)
Poster 10	Directed nano printing of carbon precursors from bacterial cellulose (Presenter: Melanie Howe, Clemson University)
Poster 11	AI-powered Real-Time Cardiac Health Monitoring: A Novel Ensemble Approach for Blood Pressure Estimation (Presenter: Rafita Haque, Florida International University)
Poster 12	Exploration of Bioelectronic Device for Epileptic Seizure Management using Glassy Carbon Electrodes (Presenter: Paulette Suro, San Diego State University)
Poster 13	Glassy carbon-based cuff microelectrodes for Vagus Nerve Stimulation (VNS) (Presenter: Neharika Ravichandran, San Diego State University)
Poster 14	Unveiling the Mechanisms of Electrode Modification and Battery Failure for Iodine-based Cathode in the Lithium-Iodine Battery (Presenter: Yunhe Zhao, University of Miami)
Poster 15	Fourier Feature Networks for Terahertz Plasma Wave Oscillations in Diamond TeraFETs (Presenter: Muhammad Mahmudul Hasan, Florida International University)
Poster 16	Development of a Real-Time Wearable Foot Pressure Mapping Device Using Piezoresistive Sensors (Presenter: Yuelin Wang, University of Miami)
Poster 17	3D printed ceramics with triply periodic minimal surfaces (TPMS) (Presenter: Adam Hussain, University of Miami)
Poster 18	Upcycling used textiles for sustainable carbon-based biomedical devices (Presenter: Matthew Vervuurt)

Day 2, January 14, 2025

8:30 am - 9:00 am	Coffee, continental breakfast, and networking
9:00 am - 9:25 am	Carbon-MEMS: A New Era in Medical, Sensors, and Energy Technology (Speaker: Dr. Tarun K Bhattacharyya, Indian Institute of Technology Kharagpur)
9:25 am - 9:50 am	Surface Modification of Glassy Carbon: Techniques to Enhance Sensitivity (Speaker: Dr. Bidhan Pramanick, Indian Institute of Technology Goa)
9:50 am - 10:15 am	Fabrication of novel oxide semiconductor nanostructures applying for optical devices (Speaker: Dr. Chaoyang Li, Kochi University of Technology)
10:15 am - 10:40 am	Re-Imagining Carbon: The Quest for Carbon Hybrid Materials Discovery and Synthesis (Speaker: Dr. Samuel Kassegne, San Diego State University)
10:40 am - 10:55 am	Coffee and networking break
10:55 am - 11:20 am	Carbon-Based THz Plasmonic Devices for Next-Generation Communications, Sensing, and Imaging (Speaker: Dr. Nezih Pala, Florida International University)
11:20 am - 11:45 am	3-minute pitch talks (Speakers: Ariel Asare, Meili Liu, Carina Chávez Granados)
11:45 am - 1:00 pm	Networking and lunch at the Centennial Village Dining Hall (See map in attachment)
1:00 pm - 4:20 pm	Technical presentation session (Speaker details – see below)
4:20 pm – 4:45 pm	Coffee and round table discussion (Moderator: Dr. Meghan Manfra)
4:45 pm - 5:30 pm	Panel discussion on sustainability of C-MEMS research (Moderator: Dr. Vadym Drozd)
5:30 pm - 5:45 pm	Closing remarks (Dr. Chunlei Wang passing to Dr. Sam Kassegne)

January 14, 2025 – Technical presentation session (15 minutes per presenter + 5 minutes Q&A)

Speaker 1 (1:00 pm - 1:20 pm)	Reactive Molecular Dynamics Modeling and Experimental Investigation of Engineered Hybrid Carbon Materials (Speaker: Carter Faucher, San Diego State University)
Speaker 2 (1:20 pm - 1:40 pm)	Hierarchical micro- and nanostructured 3D interdigitated pyrolytic carbon electrodes derived from additive manufacturing for on-chip microsupercapacitors (Speaker: Swetha Vasudevan Kanakkottu, Technical University of Denmark)
Speaker 3 (1:40 pm - 2:00 pm)	A brain on chip device featuring 3D pyrolytic carbon cup electrodes to study neurotransmitter release from midbrain and forebrain organoids (Speaker: Samuel Maraschin, Technical University of Denmark)
Speaker 4 (2:00 pm - 2:20 pm)	Wafer scale pyrolytic carbon nanogap electrodes for electrochemical sensing (Speaker: Dr. Nicolai Støvrig, Technical University of Denmark)
Speaker 5 (2:20 pm - 2:40 pm)	Carbon-Electrode Fabrication for Dielectrophoresis Devices Using Advanced SU-8 Processes (Speaker: Shivam Yadav, Clemson University)
Speaker 6 (2:40 pm - 3:00 pm)	Photoluminescence Detection of Nitro Tyrosine and 2,4,6 Trinitrophenol using Garlic Derived NSGQD and Glucose-Derived Carbon Dots (Speaker: Dr. Abu Bakar Siddique, Tecnológico de Monterrey)
Speaker 7 (3:00 pm - 3:20 pm)	Directed nano printing of carbon precursors from bacterial cellulose (Speaker: Melanie Howe, Clemson University)
Speaker 8 (3:20 pm - 3:40 pm)	Investigating the impact of acid hydrolysis on the properties of bacterial cellulose nanocrystals for carbonization (Speaker: Manasi Shah, Clemson University)
Speaker 9 (3:40 pm - 4:00 pm)	Nanofabrication of Thin Films by Two-Photon Polymerization for In Situ TEM: Atomic-Level Insights into Polymer Graphitization (Speaker: Chloé Chemin, Technical University of Denmark)
Speaker 10 (4:00 pm – 4:20 pm)	Multimodal pressure sensors for pulse waveform detection (Speaker: Dr. Borzooye Jafarizadeh, University of Miami)

Academic and Administrative
Deans' Offices:
Architecture: 1223 Dickinson Drive, Building 48-E K-7
Arts and Sciences: 227 Ashe Administration Building P-4
Business: 219 Jenkins Building P-6
Communication: 4025 Wolfson Building R-5
Education and Human Development: 312 Merrick Building P-6
Engineering: 255 McArthur Building P-3
Graduate: 235 Ashe Administration Building P-4
Law: 225 Law School N-4
Music: 125 Messenger Music Executive Building L-5
Nursing and Health Studies: 210 Schwartz Center R-4
Students: 2250 Whitten University Center N-6
President's Office: 230 Ashe Administration Building P-4
Provost's Office: 240 Ashe Administration Building P-5
Rosenstiel School Undergraduate Programs Office: 210 Ungar Building N-3

Arts, Culture, and Performance
Clarke Recital Hall (Weeks Center for Recording and Performance) L-5
Casa Bacardi D-8
Costford Cinema: Dooly Memorial Classroom Building Q-4
Gusman Concert Hall M-5
Herman Ring Theatre M-5
Knight Center for Music Innovation K-5
Lowe Art Museum P-7
Palley Pavilion P-8
Storer Auditorium (Miami Herbert Business School) P-6
Wilder Auditorium (Knight Physics Building) P-2

Athletic, Health, and Wellness Facilities
Alex Rodriguez Park at Mark Light Field (Baseball) E-9
Cobb Stadium (Soccer, Track and Field) F-7
Fieldhouse K-8
Fraser Baseball Building E-9
Greentree Practice Fields G-8
Healthy 'Canes Employee Clinic (McKnight Building) D-10
Hecht Athletic Center G-6
Herbert Wellness Center I-6
Intramural Fields I-5
Kearns Sports Hall of Fame G-7
Knight Sports Complex G-7
Klotz Indoor Batting Facility F-10
The Lennar Foundation Medical Center (UHealth at Coral Gables) H-9
Outdoor Adventures M-8
Schiff Tennis House and Center H-6
Schwartz Center for Athletic Excellence H-7
Soffer Indoor Practice Facility H-8
Spruance Outdoor Gym M-8
Student Health Service (The Lennar Foundation Medical Center) H-9
Swimming Pool/Diving (Whitten University Center) N-6
Volleyball Courts M-8
Watsco Center J-8

Child Care
Canterbury House, Rev. Henry F.S. Minich Child Care Center O-9

Fraternity Houses
Alpha Epsilon Pi E-7
Lambda Chi Alpha E-7
Pi Kappa Alpha G-6
Sigma Alpha Epsilon E-7
Sigma Chi E-8
Zeta Beta Tau E-8

Libraries
Architecture Library: Paul Buisson Architecture Library L-7
Business Library: Judi Prokop Newman Information Resource Center P-6
Law Library: Meyer Law Library (D, G) and Daner Law Library Wing (B) N-3
Main Library: Otto G. Richter Library O-4
Music Library: Marta and Austin Weeks Music Library and Technology Center L-5

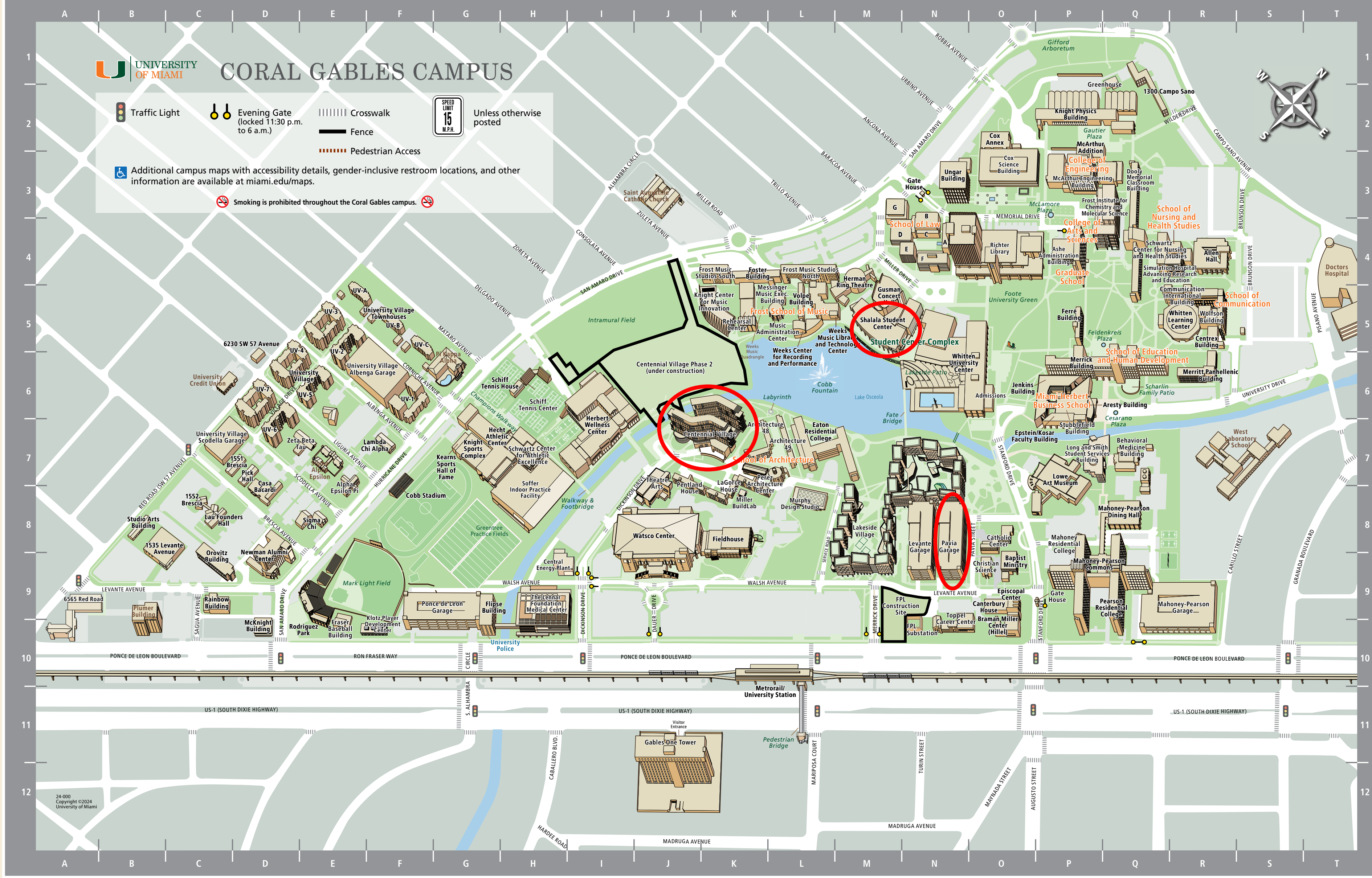
Religious Houses
Baptist Ministry O-9
Braman Miller Center for Jewish Life (Hillel) O-10
Catholic Student Center, St. Augustine Church J-3
Christian Science O-9
Episcopal Center O-9
Wesley Foundation (United Methodist) O-8

Residential Colleges and Student Housing
Eaton Residential College M-7
Centennial Village K-7
Lakeside Village M-9
Mahoney Residential College P-9
Pearson Residential College Q-9
Stanford Residential College J-5
University Village Apartments, Buildings 1-7 D-6

Retail, Dining Halls, and Restaurants
Retail:
Village Market Place: University Village E-6
Whitten University Center:
ATM (Bank of America and University Credit Union) N-6
The Market N-6
U.S. Post Office (Campus Store) N-6
University of Miami Campus Store N-6
Dining Halls:
Centennial Village Dining Hall K-7
Mahoney-Pearson Dining Hall Q-8
Cafes and Restaurants:
Archivist Cafe: Richter Library O-4
Cafe 1925: The Lennar Foundation Medical Center H-9
Corner Deli: Shalala Student Center M-5
Daybreak: Lakeside Village M-9
Einstein Bros. Bagels: Law School N-4
Faculty Club: Whitten University Center N-6
Gym Rat: Herbert Wellness Center I-6
Half Moon Empanadas at Jenkins: Miami Herbert Business School P-6
Instamarket: Shalala Student Center M-5
Hurricane Food Court: Whitten University Center N-6
Rathskeller: Shalala Student Center M-5
Sebastian's Cafe: Newman Alumni Center D-9
Smoothie King: Lakeside Village M-9
SoCal Taco Co.: Whitten University Center N-6
Starbucks: Shalala Student Center M-5

Student Life and Activities
Student Center Complex
(Shalala Student Center, Whitten University Center) N-5
Butler Center for Service and Leadership
LGBTQ Student Center
Multicultural Student Affairs
Orientation and Commuter Student Involvement
Student Activities and Student Organizations
Student Media: Miami Hurricane Newspaper, Distraction Magazine,
This Yearbook, and WVUM-FM
Veterans Resource Center

Student Services
Admission: Whitten University Center N-6
Canner Center for Academic Resources: Long and Smith Student
Services Building P-7
Catholic Center O-9
Counseling Center: Long and Smith Student Services Building P-7
Dean of Students Office: 2250 Whitten University Center N-6
Dining Services: Hurricane Food Court (Whitten University Center) N-6
Disability Services: Long and Smith Student Services Building P-7
English Composition Center: Ferre Building P-5
Housing and Residential Life Office: Eaton Residential College, Room 153 L-7
International Student and Scholar Services: 2275 Whitten University Center N-6
Student Accounts Services: Long and Smith Student Services Building P-7
Student Employment: 2275 Whitten University Center N-6
Student Technology Help Desk: Richter Library O-4
Toppel Career Center N-9
Writing Center: Richter Library O-4



Buildings

1300 Campo Sano	Q-1
1535 Levante Avenue	C-8
1551 Brescia Avenue	C-7
1552 Brescia Avenue	C-8
6230 SW 57th Avenue	D-5
6565 Red Road	A-9

A

Allen Hall, Dean Robert	R-4
Alpha Epsilon Pi	E-7
Alpha Sigma Phi	E-7
Architecture (48)	L-7
Architecture (49)	L-7
Aresty Building, Gerald and Josephine	P-6
Ashe Administration Building, Bowman Foster	P-4

B

Baptist Campus Ministry	O-9
Behavioral Medicine Building	Q-7
Braman Miller Center for Jewish Life (Hillel)	O-10

C

Canterbury House	O-9
Casa Bacardi	D-8
'Canes Central: Long and Smith Student Services Building	P-7
Catholic Center	O-9
Centennial Village	K-7
Centrex Building	R-5
Christian Science House	O-9
Cobb Stadium	F-7
Christ Science	O-7
Communication International Building	Q-2
Cox Annex, James M. Jr.	O-4
Credit Union	C-3

D

Daner Law Library Wing, Reba Engler (B)	N-3
Doctors Hospital/Baptist Health South Florida	T-4
Dooly Memorial Classroom Building, Oscar E.	Q-3

E

Eaton Residential College, Julian S.	L-7
Episcopal Center	O-9
Epstein/Kosar Faculty Building, David and Bernie	O-7

F

Ferre Building, Antonio	P-5
Fieldhouse	K-8
Filipse Building, Fred C. and Helen Donn	G-9
Foster Music Practice Building, Bertha M.	K-4
Fraser Baseball Building, Ron	E-9
Frost Institute for Chemistry and Molecular Science	Q-3
Frost Music Studios, Patricia L. - South and North	K-4, L-4

G

Gables One Tower	I-11
Gate House/Information	
Memorial Drive	N-3
McArthur Building, J. Neville	O-9
Greenhouse	Q-2
Gusman Concert Hall, Maurice	M-4

H

Hecht Athletic Center	G-7
Herbert Wellness Center, Patti and Allan	I-6
Herman Ring Theatre, Jerry	M-4
Hillel (Braman Miller Center for Jewish Life)	O-10

I, J, K

Jenkins Building, George W.	P-6
Kearns Sports Hall of Fame, Thomas N.	G-7
Klotz Indoor Batting Facility	F-10
Knight Center for Music Innovation	K-5
Knight Physics Building, James L.	P-2
Knight Sports Complex, James L.	G-7

L

LaGorce House	M-9
Lakeside Village	M-9
Lambda Chi Alpha	E-7
Lau Founders Hall, Marion and Ed	C-8
Law Classroom Building (E, F)	N-4
Learning Center, Whitten (LC)	R-5
Levante Garage	N-8
The Lennar Foundation Medical Center (UHealth at Coral Gables)	H-9
Long and Smith Student Services Building, Harold Jr. and H.T.	P-7
Lowe Art Museum, Joe and Emily	P-7

M

Mahoney Residential College, Daniel J.	P-9
Mahoney-Pearson Commons	P-9
Mahoney-Pearson Dining Hall	P-8
Mahoney-Pearson Garage	Q-9
McArthur Addition, J. Neville	P-2
McArthur Engineering Building, J. Neville	P-3
McKnight Building, Evelyn F. and William L.	D-10
Memorial Classroom Building, Oscar E. Dooly	Q-3
Merrick Building, Solomon G.	P-6
Merritt Panhellenic Building, Mary B.	R-6
Messenger Music Executive Building	L-4
Metrorail/University Station	K-10
Meyer Law Administration (A, C)	N-4
Meyer Law Library (D, G)	M-3
Miller BuildLab	K-8
Murphy Design Studio	L-8
Music Administration Building	K-5

N, O, P

Newman Alumni Center, Robert and Judi Prokop	D-8
Orovitz Building, Max	C-8
Pavia Garage	N-8
Pearson Residential College	Q-9
Perez Architecture Center, Jorge M.	K-7
Pi Kappa Alpha	E-6
TBD	E-6

Pick Hall, Albert D-7
Plumer Building B-9
Ponce de Leon Garage F-9

R

Rainbow Building	C-9
Rehearsal Center	K-5
Richter Library, Otto G.	O-4
Rodriguez Park, Alex	E-9
Rosborough Tower, Melanie R. (Stanford Residential College)	J-6

S

St. Augustine Catholic Church/Student Center	J-3
Schiff Tennis Center, Neil	H-6
Schiff Tennis House	H-6
Schwartz Center for Athletic Excellence, Theodore G. and Todd G.	H-7
Schwartz Center for Nursing and Health Studies, M. Christine	Q-4
Sigma Chi	E-8
Silvers and Rubenstein Hall	N-4
Simulation Hospital Advancing Research and Education	Q-4
Stanford Residential College-Commons, Henry King	J-5
Stubblefield Classroom Building, Elsie and William	P-6
Student Center, Donna E.	M-5
Soffer Indoor Practice Facility	H-8
Studio Arts Building	B-8

T, U, V

Theatre Arts Building	J-8
Toppel Career Planning and Placement Center, Patricia and Harold	N-9
University Center, Whitten (UC)	N-6
Ungar Building, Arthur A.	N-3
University Village, Buildings 1-7	D-6
University Village Albenga Garage	E-6
University Village Scodella Garage	C-7
University Village Townhouses, Buildings A-C	F-5
Volpe Classroom Building, Arnold	L-5

W, X, Y, Z

Walsh Tower, Judge William E. (Stanford Residential College)	K-5
Watsco Center	J-8
Weeks Center for Recording and Performance, L. Austin	L-5
Weeks Music Library and Technology Center, Marta and Austin	L-5
West Laboratory School	R-7
Whitten Learning Center, George E. (LC)	R-7
Whitten University Center, Norman A. (UC)	O-6
Wolfson Building, Frances L.	R-5

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