

CALL FOR ABSTRACTS

with an Application Form for the Elizabeth A. Hays Travel Award



The 83rd Annual Meeting of the
FLORIDA ACADEMY OF SCIENCES

will be held at

Florida Institute of Technology
Melbourne, Florida
March 8-9, 2019

*All FAS abstracts must be submitted online at
<http://fas.fit.edu/annual-meeting/abstract-submission>*

Abstract Topics: Abstracts on any aspect of science or engineering are solicited and you are cordially invited to organize additional sessions or symposia in any area of science, engineering or science education. For further information and procedures, visit the academy's web page located at fas.fit.edu or contact the FAS Program Chair, Dr. David Karlen (Environmental Protection Commission of Hillsborough County) at 813-627-2600 x1202, email karlen@epchc.org

Abstract Deadline: Friday, 21 December 2018
Early submissions are strongly encouraged.
Please note that acceptance is not guaranteed.

Section Chairs, 2018-2019, Florida Academy of Sciences

- AGR** Agricultural and Natural Resource Sciences: Interim Chair: Dr. David Karlen, Environmental Protection Commission of Hillsborough County, 3629 Queen Palm Drive, Tampa, FL 33619, phone: 813-627-2600 x1202
- ANT** Anthropological Sciences: Mr. Justin Maiers, University of South Florida, 4202 E. Fowler Ave. Tampa, FL 33620, phone: 813-947-2138, email: maiersj@mail.usf.edu
- AOS** Atmospheric and Oceanographic Sciences: Dr. Michael Robinson, Department of Biology, Barry University, 11300 NE 2nd Ave, Miami Shores, FL 33161, phone: 305-899-4930, email: mprobinson@mail.barry.edu; and Co-Chair Dr. David Karlen, Environmental Protection Commission of Hillsborough County, 3629 Queen Palm Drive, Tampa, FL 33619, phone: 813-627-2600 x1202
- BIO** Biological Sciences: Dr. Laura Mudd, Department of Biology, Barry University, 11300 NE 2nd Ave, Miami Shores, FL 33161, phone: 305-899-3204, email: lmudd@barry.edu; and Co-Chair: Dr. Iain Duffy, Department of Math and Science, Saint Leo University, 33701 State Road 52, Saint Leo, FL 33574, phone: 352-588-8410
- CMS** Computer/Mathematical Sciences: Dr. Ricardo Jimenez, Department of Math and Computer Science, Barry University, 11300 NE 2nd Ave, Miami Shores, FL 33161, phone: 305-899-4945, email: rjimenez@barry.edu
- ENG** Engineering Sciences: Mr. John Baker, PO Box 26, Tallahassee, FL 32302, phone: 850-510-7729, email: bdozen@hotmail.com; and Co-Chair: Dr. Sessa Srinivasan, Physics Department, Florida Polytechnic University, 4700 Research Way, Lakeland, FL, 33805, phone: 863-874-8527, email: sssrinivasan@floridapoly.edu
- ENV** Environmental Chemistry and Chemical Sciences: Dr. Darin Bell, Department of Math and Science, Saint Leo University, 33701 State Road 52, Saint Leo, FL 33574, phone: 352-588-7368, email: darin.bell@saintleo.edu
- GEO** Geosciences: Dr. Al Karlin, Southwest Florida Water Management District, 2379 Broad Street Brooksville, FL 34604, phone: 352-796-7211 x 4204, email: Al.Karlin@swfwmd.state.fl.us
- MED** Medical Sciences: Dr. Ana Jimenez, Department of Biology, Barry University, 11300 NE 2nd Ave, Miami Shores, FL 33161, phone: 305-899-3276 email: amjimenez@barry.edu; and Co-chair. Dr. Mark Best MD, MPH. LECOM-Bradenton, 5000 Lakewood Ranch Blvd, Bradenton, FL 34211, phone: 941-782-5662, email: mbest@lecom.edu
- PSS** Physics and Space Sciences: Dr. Georgui Bourov, Embry-Riddle Aeronautical University, 600 S Clyde Morris Blvd, Daytona Beach, FL 32114, phone: 386-323-8829, email: bourov987@erau.edu
- RES** Florida Committee on Rare & Endangered Plants & Animals: Dr. I. Jack Stout, Department of Biology, University of Central Florida, Department of Biology, 4000 Central Florida Blvd., Orlando, FL 32816-2368, phone: 407-823-2919, email: i.stout@ucf.edu
- SOC** Social Science: Dr. Jennifer Wortham, University of Tampa 401 W. Kennedy Blvd. Tampa, FL 33606, phone: 813-257-1722, email: jwortham@ut.edu
- TCH** Science Teaching: Co-Chair Dr. Tom Arnold, LECOM-Bradenton, 5000 Lakewood Ranch Blvd, Bradenton, FL 34211, phone: 941-782-5672, email: tarnold@lecom.edu, and Co-Chair Ms. Carmen Carpenter, South University Bachelor of Health Sciences Program, 9801 Belvedere Road, Royal Palm Beach, FL 33411, phone: 912-226-2821 email: ccarpenter@southuniversity.edu
- Local Arrangements Chair:** Richard L. Turner, Professor Emeritus, Department of Ocean Engineering & Marine Sciences, Florida Institute of Technology, 150 W. University Blvd., Melbourne FL 32901-6975, phone: 321-674-8196, email: rturner@fit.edu
- Program Chair:** Dr. David Karlen, Water Management Division, Environmental Protection Commission of Hillsborough County, 3629 Queen Palm Drive, Tampa, FL 33619, phone: 813-627-2600x1202, email: karlen@epchc.org

FLORIDA ACADEMY OF SCIENCES 83rd ANNUAL MEETING

MARCH 8-9, 2019

MEETING INFORMATION

OVERVIEW

The 83rd Annual Meeting of the Florida Academy of Sciences will be held at the Florida Institute of Technology in Melbourne on 8-9 March 2019. Abstracts on all aspects of science and engineering are solicited for general sessions in all sections of the Academy (list of sections on previous page). Any person or section interested in organizing a special session should contact the appropriate Section Chair or the Program Chair for further information.

Florida Institute of Technology, Melbourne

Founded at the dawn of the Space Race in 1958 as Brevard Engineering College, Florida Institute of Technology is the only independent, technological university in the Southeast. Florida Tech today is a comprehensive, research-intensive national university offering undergraduate, master's, and doctoral degrees that prepare students for careers of the future. As Florida's STEM University™ and headquarters of the Florida Academy of Sciences, Florida Tech's approach to academics is research-driven, high-tech, and hands-on, allowing our students to both gain knowledge and get real experience in applying it. Fields of study include science, engineering, aeronautics, business, humanities, mathematics, psychology, communication and education. PayScale.com ranks graduates' mid-career median salaries in the top two among Florida's universities and in the top 6% nationwide. The university has been named a *Barron's Guide* "Best Buy" in College Education, designated a Tier One Best National University in *U.S. News & World Report*, and is one of just nine schools in Florida lauded by the 2019 *Fiske Guide to Colleges*, which describes Florida Tech as one of the "best and most interesting institutions in the nation." In 2016, Times Higher Education ranked Florida Tech one of the top 20 small universities in the world. Additional information is available at www.fit.edu.

DRIVING DIRECTIONS

Florida Institute of Technology, 150 W. University Blvd., Melbourne FL 32901, is located about 4.5 miles east of I-95. From the north, take I-95 Exit 180 for U.S. 192 and go east 5.2 miles to Babcock Street (SR 507); turning right (south) onto Babcock, travel 1.0 mile to University Boulevard and turn right (west) into campus on University. From the west, take U.S. 192, and follow instructions above for travel from the north. From the south, take I-95 Exit 176 for CR 516 (Palm Bay Road) and go east 2 miles to Babcock Street; turning left (north) onto Babcock, travel 2.0 miles to University Boulevard and turn left (west) into campus on University. Once on campus, the best option for parking will be a large lot on the west side of Country Club Road, which marks the west side of campus and intersects University Blvd. Look for signage with the Academy's name, acronym, or logo.

DAYS, TIMES AND SESSION SCHEDULES

The scheduling is:

- Friday sessions (all Senior Academy): AGR, ANT, AOS, BIO, CMS, ENG, ENV, GEO, MED, PSS, RES, SOC, and TCH. See page 2 for explanation of abbreviations.
- Saturday sessions: Florida Junior Academy of Science

The scheduling details will be finalized in February 2019.

PARKING

FAS 2019 will take place during FIT's spring break. Abundant on-campus parking will be available along Babcock Street, University Boulevard, and Country Club Road, but the dedicated FAS parking lot will be the one on the west side of Country Club Rd. just north of its intersection with University Blvd. Avoid parking in spaces that are restricted by permanent signs.

REGISTRATION

ALL PRESENTERS AND ATTENDEES MUST REGISTER AND PAY THE APPROPRIATE REGISTRATION FEE but you need not be a member of the Academy to present a paper or poster. Please make every effort to register online before February 1, 2019 - not only will it save you money, you will not have to stand in a long registration line at the time of the meeting.

LOCAL ARRANGEMENTS

The Local Arrangements Chair for the Annual Meeting is Dr. Richard Turner (see contacts, p. 2). He should be consulted for any special meeting needs.

LODGING

No reservations can be made through the Academy. We recommend booking at the following hotels, as soon as possible.

Residence Inn by Marriott, Melbourne

1.6 mi

Address: 1430 S Babcock St, Melbourne, FL 32901

Phone: (321) 723-5740

Super 8 by Wyndham, Melbourne

1.8 mi

Address: 1515 S Harbor City Blvd, Melbourne, FL 32901

Phone: (321) 723-4430

Hilton Melbourne Rialto Place

1.9 mi

Address: 200 Rialto Pl, Melbourne, FL 32901

Phone: (321) 768-0200

Courtyard by Marriott, Melbourne West

2.2 mi

Address: 2101 W New Haven Ave, Melbourne, FL 32904

Phone: (321) 724-6400

Hampton Inn & Suites, West Melbourne

2.2 mi

Address: 4520 Durham Dr, Melbourne, FL 32904

Use 4555 Durham Drive for GPS directions, not 4520 Durham Drive.

Phone: (321) 372-7445

Quality Inn

2.4 mi

Address: 890 Palm Bay Rd NE, Palm Bay, FL 32905

Phone: (321) 725-2952

La Quinta Inn & Suites, Melbourne-Palm Bay

4.8 mi

Address: 4510 W New Haven Ave, Melbourne, FL 32904

Phone: (321) 724-2050

Hampton Inn, Melbourne

4.9 mi

Address: 194 Coastal Lane, Melbourne, Florida, 32904

Phone: (321) 956-6200

MEALS

Breakfast, lunch, dinner, and snacks will be available at several locations on campus during the meeting (<https://www.fit.edu/dining/>). Campus maps and other information at the Registration Desk will direct participants to dining options within 2 miles of campus.

BANQUET

The Academy banquet is scheduled for Friday evening, March 8th. We are honored to have Dr. Richard L. Turner from Florida Institute of Technology and our 2018 FAS medalist as our banquet speaker. Additional banquet information (reservations, tickets, *etc.*) will be available on the FAS Online website link for Meeting Registration (fas.fit.edu) in November 2018. ***Please note:*** NO banquet tickets will be sold at the meeting.

PLENARY SESSION SPEAKER

The Meg Gale Plenary Address will be given on Friday, March 8th, immediately following the business meeting. The address will be by Dr. Duane E. De Freese, Director of the Indian River Lagoon National Estuary Program.

FLORIDA JUNIOR ACADEMY OF SCIENCE ANNUAL MEETING

The Junior Academy will meet with Florida Academy of Sciences at the Annual Meeting. As the student division of FAS, the Florida Junior Academy of Science provides opportunities that encourage middle and high school students in science by allowing them to compete, share, and network with other students and adults having common interests. The focus of this "common bond" among participants is their research activities. The Florida Junior Academy of Science is seeking volunteers to assist in judging and to act as section moderators at its meeting, to be held on Saturday, March 9^h, 2019. The Junior Academy is also seeking individuals in early February of 2019 to evaluate research papers submitted for this meeting. Persons interested in participating in this rewarding experience should contact Ms. Leya Joykutty, FJAS Director, email: leyajoykutty@gmail.com

NOMINATIONS FOR THE FAS MEDALIST

The Florida Academy of Sciences encourages its members to submit formal nominations for candidates to be considered as the 2019 Medalist (see p. 7 for a listing of past FAS Medalists).

Nomination Procedure: The medal is presented each year at the annual meeting to a resident of the State of Florida who has contributed in an outstanding manner to the promotion of scientific research, to the stimulation of interest in the sciences, or to the diffusion of scientific knowledge. The candidate need not hold the Ph.D. He or she may be a research scientist, a philanthropist, an educator, a journalist, a science fair coordinator, or a member of industry, government, or other organization and who has met the criteria given above. The nominee does not need to be a member of FAS nor do you have to be a member to submit a nomination.

A nomination form is available on the Academy's website at

<http://fas.fit.edu/annual-meeting/awards/>

Please email the completed form and any supporting materials as a pdf file to: Dr. Jeremy Montague: jmontague@barry.edu. Your nomination form must arrive no later than **December 14, 2018**. The Committee might ask you to obtain a copy of your nominee's resume or curriculum vitae.

COMMERCIAL AND INSTITUTIONAL EXHIBITS

Space is available on a first come-first served basis. Exhibits by research institutions or organizations offering programs of an informational nature may be given free space. Parties interested in fee or free spaces should contact the FAS Office for details: (321) 831-2500 or email: Flacademyofsciences@gmail.com. The Academy reserves the right to deny exhibits by individuals or organizations with a focus that is not pertinent or is contrary to its goals.

Florida Academy of Sciences Medalists 1963–2018

1963	Dr. Archie Carr	University of Florida	Biology
1964	Dr. Werner A. Baum	University of Miami	Meteorology
1965	Dr. Alex G. Smith	University of Florida	Astronomy
1966	Dr. Karl Dittmer	Florida State University	Chemistry
1967	Dr. Alfred H. Lawton	University of South Florida	Medicine
1968	Dr. Sidney Fox	University of Miami	Biochemistry
1969	Dr. F. G. Walton Smith	University of Miami	Marine Science
1970	Dr. Pierce Brodkorb	University of Florida	Zoology
1971	Dr. Maurice A. Barton	Mound Park Foundation	Medicine-Teaching
1972	Dr. Lloyd M. Biedler	Florida State University	Physiology-Biophysics
1973	Dr. Ruth S. Breen	Florida State University	Botany
1974	Dr. E. T. York, Jr.	University of Florida	Agriculture
1975	Dr. Alex E. S. Green	University of Florida	Physics
1976	Dr. Robert N. Ginsburg	University of Miami	Geology
1977	Dr. Michael Kasha	Florida State University	Molecular Biophysics
1978	Dr. John Edward Davies	University of Miami	Public Health
1979	Dr. Stanley S. Ballard	University of Florida	Optics
1980	Dr. Thomas D. Carr	University of Florida	Astronomy
1981	Dr. Harold J. Humm	University of South Florida	Marine Biology
1982	Dr. George B. Butler	University of Florida	Chemistry
1983	Dr. Karen Steidinger	Florida Dept. Natural Resources	Biology
1984	Dr. Yngve Ohrne	University of Florida	Chemistry
1985	Dr. William Sears	Florida Atlantic University	Anthropology
1986	Dr. E. Dwight Adams	University of Florida	Physics
1987	Dr. Larry Hench	University of Florida	Engineering
1988	Dr. Gene C. Ness	University of South Florida	Biochemistry
1989	Dr. Frank Bradshaw Wood	University of Florida	Astronomy
1990	Dr. Martin Uman	University of Florida	Electrical Engineering
1991	Dr. Frank Millero	University of Miami	Oceanography
1992	Dr. Gregory Choppin	Florida State University	Chemistry
1993	Dr. D. O. Shah	University of Florida	Chemical Engineering
1994	Mrs. Barbara B. Martin	University of South Florida	Chemistry
1994	Dr. Dean F. Martin	University of South Florida	Chemistry
1995	Dr. James N. Layne	Archbold Biological Station	Zoology
1996	Dr. Leslie Sue Lieberman	University of Florida	Anthropology
1997	Dr. George R. Newkome	University of South Florida	Chemistry
1998	Dr. Joseph J. Krzanowski	University of South Florida	Pharmacology
1999	Dr. Abraham Kandel	University of South Florida	Computer Science
2000	Richard F. Lockey, M.D.	University of South Florida	Medicine
2001	Dr. Clinton J. Dawes	University of South Florida	Biology
2002	Dr. John H. Trefry	Florida Institute of Technology	Marine Science
2003	Dr. Christian A. Clausen	University of Central Florida	Chemistry
2004	Dr. Jerald T. Milanich	University of Florida	Archaeology
2005	Dr. Thomas Crisman	University of Florida	Ecology
2006	Dr. James O'Brien	Florida State University	Climatology
2007	Dr. Robert A. Horton	Florida State University	Chemistry
2008	Dr. John M. Lawrence	University of South Florida	Biology
2009	(no medal awarded)		
2010	Dr. Terry D. Oswalt	Florida Institute of Technology	Astronomy
2011	Dr. Michael J. Greenberg	University of Florida	Biology
2012	Dr. Bruce J. MacFadden	University of Florida	Paleontology
2013	Dr. Lonnie Ingram	University of Florida	Microbiology
2014	Dr. Peter Delfyett	University of Central Florida	Physics
2015	Dr. Paul Sanberg	University of South Florida	Medicine
2016	Dr. George A. Maul	Florida Institute of Technology	Oceanography
2017	Dr. Alan G. Marshall	Florida State University	Chemistry
2018	Dr. Richard L. Turner	Florida Institute of Technology	Biology

STUDENT AWARDS

Students presenting papers at the Annual Meeting of the Academy, and who are registered for the Meeting, may be considered for a number of awards. Details are presented below. Students wishing to be considered for one or more of these awards should indicate their interest on the FAS abstract submission website. Dr. Sessa Srinivasan is the Awards Chair and he can be contacted at: Dr. Sessa Srinivasan, Physics Department, Florida Polytechnic University, 4700 Research Way, Lakeland, FL, 33805, phone: 863-874-8527, email: sssrinivasan@floridapoly.edu

1. Outstanding Student Paper Award - This award is presented by any of the Academy Sections to graduate and undergraduate students for oral and poster presentations.
2. Al Hall Memorial Award (student award in Engineering) – The student shall have the following or must meet the following criteria:
 - Have at least 3.0 GPA (grade point average);
 - Maintain 12 credit hours per semester;
 - Be a Junior/Senior/Graduate Student;
 - Be a FAS student member prior to presenting an oral or poster paper at the Annual Meeting of the Academy.

The award shall be given for an oral paper or poster that judges at the Annual Meeting of the Academy deem outstanding in nature. This award shall be given only to one recipient annually. The winner of the Al Hall Memorial Award consists of a monetary gift, plaque, and certificate for the outstanding paper and/or poster presentation at the FAS Annual Meeting.

3. Sigma Xi Award – One for undergraduate students, presented by Barry University chapter of Sigma Xi, is for \$100 and a certificate for the outstanding presentation by a Barry University undergraduate student.
4. Dr. Elizabeth A. Hays Travel Award: The Florida Academy of Sciences provides travel support for students enrolled at colleges and universities to present papers at its annual meetings. This awards program is supported by an endowed account, the Dr. Elizabeth A. Hays Travel Award Fund. Awards, which are based on demonstrated financial need, may be applied to the costs of travel, lodging, and meals, Academy student membership for the calendar year of the meeting, or the cost of the banquet. The amount of each award is \$100, and the award includes waiver of the meeting registration fee. Instructions for applying are attached. (***SEE THE LAST TWO PAGES OF THIS DOCUMENT***).

FLORIDA ACADEMY OF SCIENCES 83rd ANNUAL MEETING
MARCH 8-9, 2019

INSTRUCTIONS FOR ABSTRACT SUBMISSION

ONLINE SUBMISSION

The abstract online submittal form is available at:

<http://fas.fit.edu/annual-meeting/abstract-submission>

Authors will be notified of abstract acceptance in January 2019.

FAS requests complete names, addresses (including street addresses and ZIP codes), organizational departments, phone numbers, *etc.*

PUBLICATION OF FAS ABSTRACTS

All accepted FAS abstracts will be published in the Program Issue of the *Florida Scientist* (Volume 82, Supplement 1). Meeting registrants must stop at the Registration Desk to receive their copies.

DIRECTIONS FOR ABSTRACT PREPARATION

Abstracts must be typed (or text may be cut-and-pasted) into the appropriate submission window on the website (see URL above). WE ASK ALL AUTHORS TO ADHERE STRICTLY TO THE INSTRUCTIONS SHOWN BELOW IN ORDER TO ACHIEVE UNIFORM PUBLICATION; PLEASE FOLLOW THE DIRECTIONS CAREFULLY. FAILURE TO ADHERE TO THE INSTRUCTIONS WILL DELAY THE ACCEPTANCE OF YOUR ABSTRACT. Sample abstracts follow at the end of this document, and are also posted on the online submission URL shown above.

Abstract Size: No more than 300 words (*including* title, authors, affiliations, *etc.*). ***It is crucial for publication in the Program Book that abstracts are kept within this limit...the submission software is designed to truncate abstracts at 300 words.***

Order of parts: Title, author(s), affiliation(s), text (including acknowledgment of financial and technical assistance).

Title: Upper case 1st letter for the 1st word of the title, and for 1st letter of proper nouns, followed by a period.

Author(s): Immediately following title. Author's first and middle (optional) initials and last name in all UPPERCASE letters. If multi-authored, use "and" in lowercase before last author. Use numbers in parenthesis to indicate different author affiliations (please see example abstracts). Author(s) section should be followed with a period.

Affiliation(s): Immediately following author(s). Upper and lower case letters. Full address with zip code, and state abbreviation (FL or others). Use standard abbreviations (*e.g.*, Dept., Inst., Univ., Geol.) only if necessary to save space for text, and followed with a period.

Text: Immediately following affiliations. According to standard typing of scientific text in respective discipline.

POSTERS

Poster exhibits of scientific studies on any topic are ***strongly encouraged***, and will be displayed during the annual meeting. ***Poster presentations must include an abstract to be submitted online by 21 December 2018.*** All poster abstracts will appear in the Program Issue.

POSTER FORMAT

Maximum size is approximately 3'×4' (a size used commonly at many conferences and meetings). We request posters to be printed/displayed in landscape view.

VIDEO PRESENTATIONS

A limited number of short (3-5 minute) video presentations of scientific studies on any topic will be accepted and shown during the poster session. ***Video presentations must include an abstract to be submitted online by 21 December 2018.*** All video abstracts will appear in the Program Issue. If you are interested in submitting a video presentation please contact the Program Chair, Dr. David Karlen at karlen@epchc.org for further details.

AUDIO VISUAL EQUIPMENT

The standard presentation format will be PowerPoint slides submitted to the session chair prior to the session meeting. We expect presenters will have their PowerPoint presentations available on their personal thumb-drive/memory-stick devices 15 minutes before the beginning of a session.

Overhead projectors will be available in all meeting rooms. Presenters should ***specialy request*** on the abstract online submittal form if they will require any special AV equipment.

WHEN TO SUBMIT

The deadline for abstract submittal is ***Friday, 21 December 2018***, but FAS ***strongly*** encourages early submissions.

PLANNING YOUR PRESENTATION

Each speaker will have 15 minutes for his or her presentation. There will be no exceptions to this rule. It is recommended that your presentation last approximately 12 minutes, so that there will be ample time for questions afterward. Your Section Chair or moderator will give you a signal as the end of your 12 minutes approaches. Please plan on being present when the session in which you are going to speak begins. Your Section Chair may have instructions that speakers need to hear. In addition, if you are going to be using special equipment, such as slide projectors, you should be at the meeting room 15 30 minutes before the start of your session to see that this equipment is working properly.

QUESTIONS?

Contact your Section Chair (page 2), or the Program Chair, Dr. David Karlen at: karlen@epchc.org

Please check the FAS website for further updates:

<http://fas.fit.edu>

(See next page for sample abstracts.)

Abstract sample, single author:

A predictive method for uncoupled vessel roll prediction in an irregular seaway. J.T. HUNSUCKER. Department of Marine and Environmental Systems, Florida Institute of Technology, 150 W. University Blvd, Melbourne, FL 32901. The prediction of roll for a vessel in an irregular seaway is a difficult problem, but one that naval architects should be able to answer. In this paper, the author uses strip theory in conjunction with semi-empirical formulas to solve for the damping and added mass and thus an analytical solution for the response amplitude operators (RAO's). The linear superposition technique is then used for calculating the ship response in an irregular seaway. The Pierson-Moskowitz or International Towing Tank Conference (I.T.T.C.) sea spectrum is plotted against encounter frequency of the vessel then combined with the roll amplitude spectrum to statistically determine the significant, average one-tenth, and average one-hundredth largest roll amplitudes. In an effort to validate the method, the results obtained are analyzed against data from the RV Serpent. (Research funded by Ocean Motions Company, Micco, FL 32976)

Abstract sample, more than one author from same institution:

The effects of structure vs. chemistry of adult *Balanus eburneus* (Ivory barnacle) skeletons on settlement induction of Indian River Lagoon fauna. J. ROBERTS, T. BRUNNER, R. JORDAN, and K.B. JOHNSON. Department of Marine and Environmental Systems, Florida Institute of Technology, 150 W. University Blvd, Melbourne, FL 32901. Comparisons were done between panels containing skeletal remains of *Balanus eburneus* (n = 5) vs. clay skeletal molds (n = 5) on the recruitment of organisms to settlement panels in the Indian River Lagoon (Florida). Clay replicas were fashioned from fire hardened earthen clay to highlight the settlement effects due to structure and topography which are independent of the chemistry of the adult skeletons. Four distinct terrains (clay barnacle, clay plain, skeletal barnacle, and skeletal plain) were considered for possible settlement. An ANOVA statistical analysis ($\alpha = 0.05$) was used to compare settlement patterns between the five most abundant settled fauna. Those fauna were algal propagules, foraminiferans, mollusks, amphipods, and isopods. Significant differences were found between foraminiferans ($p < 0.01$) and mollusks ($p = 0.037$), however no significance was observed between algal propagules ($p = 0.132$), amphipods ($p = 0.078$), and isopods ($p = 0.384$). (Funding provided by Florida Institute of Technology)

Abstract sample, more than one author from two or more institutions:

Tsunami total risk in the Caribbean and adjacent regions. G.A. MAUL (1), X.W. PROENZA (2), and C. VON HILLEBRANDT-ANDRADE (3). (1) Department of Marine and Environmental Systems, Florida Institute of Technology, 150 W. University Blvd, Melbourne, FL 32901, (2) National Weather Service, Fort Worth, TX 76102, (3) NOAA NWS Caribbean Tsunami Warning Program, Mayaguez, PR 00680. Total Risk is defined as hazard (frequency of occurrence of tsunami events) times measures of elements at risk (human exposure including property) times measures of vulnerability (community and government preparedness) in a given epoch (Nott, 2006). While the tsunami hazard in the Caribbean and adjacent regions (averaging 19 ± 22 years between deadly events) is lower than Pacific coastal areas, the total risk to life and property is at least as high as the USA West Coast, Hawaii, or Alaska, because of the higher elements at risk due to Caribbean population density and coastal living, and greater vulnerability due to beach tourism so attractive to more than 35 million visitors a year. Viewed in this light, the allocation of resources by governments, industry, and insurers needs to be adjusted for the better protection of life, for improved coastal engineering, and for infrastructure protection.



Florida Academy of Sciences

Dr. Elizabeth A. Hays Travel Award

Application Form for 2019 Annual Meeting

The Florida Academy of Sciences provides travel support for students enrolled at colleges and universities to present papers at its annual meetings. This awards program is supported by an endowed account, the Dr. Elizabeth A. Hays Travel Award Fund. Awards, which are based on demonstrated financial need, may be used for the cost of the banquet, Academy student membership for the calendar year of the meeting, and the costs of travel, lodging, and meals. In addition, **the registration fee is waived for award recipients.** (Applicants will be informed about awards early enough for them to register for the meeting with or without paying by the early registration deadline.)

A completed application form must be submitted via email or postmarked by **Monday, 17 December 2018** or earlier and be accompanied by (1) a copy of the **abstract** (submitted by the same deadline online at: <http://fas.fit.edu/annual-meeting/abstract-submission> for an oral or poster presentation at the 83rd Annual Meeting of the Academy; (2) an **essay** on the significance of the student’s attendance of the annual meeting and on the reasons for financial need; (3) an **itinerary**; and (4) a **letter** of support from the student’s research or academic advisor. If submitting by email, please scan or save all of above documents into a single pdf or MS Word file.

The letter of support must address the student’s **financial need**, not the nature of the research; and it **must certify** that the student is currently enrolled at the institution. In addition, the advisor must indicate whether or not the institution can support the student’s travel by institutional vehicle or other mode of travel if the student requests a subsidy for travel. The advisor’s letter may be sent separately, but it, too, must be emailed by **17 December 2018** or earlier. It is recommended that the student provide the advisor with a copy of this completed application form and the essay to assist the advisor in composing the letter of support.

The application will be reviewed by the Awards Committee of the Academy, and all the information submitted will remain confidential. The abstract will be published in *Florida Scientist* 82 (Suppl. 1) as submitted per instructions in the Call-for-Abstracts. Recipients will be announced along with recipients of other student awards made for the annual meeting. This form, the essay, other supporting documentation, and the advisor’s letter should be emailed to:

Dr. Sesha Srinivasan
FAS Awards Committee Chair
Email: ssrinivasan@floridapoly.edu

In accordance with Academy policy, the Awards Committee does not discriminate against any person on the basis of race, color, national or ethnic origin, sex, sexual orientation, religion, political belief, age, or handicap.

Name of student: _____

Current college or university: _____

Currently enrolled (**circle one**): B.A./B.S. M.A./M.S. Ph.D. Major: _____

Undergraduates, current classification (**circle one**): freshman sophomore junior senior

U.S. Postal address: _____

Email address: _____

(Continue next page)

	Advisor	Department Chair/Head
Name		
Circle status of advisor	Research Academic	
Department		
Institution		
Street or other address info.		
City, State, Zip Code		
Telephone		
Email address		

Title of presentation: _____

Format of presentation (**circle one**): Oral Poster

Authors: _____

I am requesting a grant to assist with travel expenses for the 2019 Annual Meeting of Florida Academy of Sciences. In submitting this application and supporting documentation, I recognize that, if granted an award, I must be the presenter of the paper described above and that I will use the funds for their intended purposes or return to Florida Academy of Sciences the funds received and forfeit the waiver of the registration fee.

Signature: _____ Date: _____

Email this completed form and supporting material (**abstract, essay, itinerary, advisor’s letter**) to: Dr. Sessa Srinivasan, FAS Awards Committee Chair, email: ssrinivasan@floridapoly.edu. If sent separately, have your advisor email the letter of support to the same address. All materials must be received no later than **December 17, 2018**.