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. Sesha Srinivasan, Physics Department, Florida Polytechnic University, 4700 Research Way, Lakeland, FL, 33805, phone: 863-874-8527, email: ssrinivasan@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. Geourogui Bourov, Embry-Riddle Aeronautical University, 600 S Clyde Morris Blvd, Daytona Beach, FL 32114, phone: 386-323-8829, email: bouro987@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: 952-226-2821 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
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 9th, 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: leyajoyster@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. Sesha Srinivasan is the Awards Chair and he can be contacted at: Dr. Sesha Srinivasan, Physics Department, Florida Polytechnic University, 4700 Research Way, Lakeland, FL, 33805, phone: 863-874-8527, email: ssrinivasan@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).
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 specially 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 (α = 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)
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. Seshu 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.