



## Applications for Summer Space & Science Camp for Girls Open Soon



*The 2020 Women's STARS Program organized by PISCES will be held from July 6 to 11. Applications will be accepted online between March 11 and May 15.*

Applications for the 2020 Women's STARS Program will open on Wednesday, March 11, at [www.pacificspacecenter.com](http://www.pacificspacecenter.com). STARS, short for STEM Aerospace Research Scholars, is a week-long space and science vocation camp for Hawaii high school girls interested in STEM. The program exposes young women to a variety of careers in space, science and technology, while engaging them with female mentors and role models who can provide inspiration and encouragement.

Up to 12 students, ages 14 to 18, will be accepted to attend the program this year. Students living anywhere in the State of Hawaii are eligible to attend. All meals, on-island transportation and accommodations will be provided at no cost to students. There is no fee to apply, but students coming from other islands most secure their own airfare. STARS began in 2014 is supported by a growing number of companies, organizations and sponsors.



@PISCES\_HAWAII

### Letter from the Director



Aloha kākou!

NASA's new Artemis program—which aims to return humans to the Moon in 2024 to establish a permanent settlement—has renewed interest in In-Situ Resource Utilization (ISRU) technologies and other areas of lunar surface research. Our work in basalt sintering directly addresses this need for the future of human and robotic space exploration, and has been widely recognized by planetary scientists from various institutions.

This year, we are looking to collaborate on at least five grant proposals to develop sintered basalt for landing pad applications and other infrastructure, and to support instrument testing for planetary research at Hawaii's high-fidelity analog sites.

In workforce development, we are in the process of securing grants and sponsorship funding for our Women's

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## Basalt Tile Tested for Launchpad by Masten Space Systems

Last month a sintered basalt tile made at PISCES underwent preliminary testing as a launch and landing pad base material. Masten Space Systems in Mojave, California conducted the test, subjecting a 12" x 12" x 1" basalt tile to a two-second rocket burst fueled by liquid oxygen and liquid methane. Positioned 20 cm from the tile, the burn produced 100 pounds of thrust at 2,550 K. The tile cracked under the intense heat and pressure (pictured right), but the results show promise. Cracking could be prevented in future tests by manufacturing a thicker tile.

PISCES plans to further pursue testing of its basalt tiles for launchpad applications and hopes to develop a highly durable ISRU (In-Situ Resource Utilization) material to withstand the infernal temperatures and powerful force of rocket engines. If successful, the same sintering methods could be used on the moon to build lunar launch and landing pads. These pads would help mitigate the spread of the abrasive, statically charged lunar dust that poses problems for spacecraft systems, instruments and spacesuits.



*Above: A 12" x 12" sintered basalt tile created at PISCES was tested as a launchpad material last month. Photo: Masten Space Systems.*

## Hawaii Business Magazine Features PISCES Programs & Research



*Above: Students of the Women's STARS Program pose outside the HI-SEAS habitat on Mauna Loa in June 2019.*

PISCES' work in aerospace development was recognized in Hawaii Business (HB) magazine last month. [PISCES: A Local Launch Pad to Space and Aerospace Careers](#), highlighted hands-on internship and STEM career opportunities offered to local college and high school students by the state-funded agency. These include a paid and credit-based internship program in robotics and planetary geology, and the summer STARS program for high school girls.

The article also highlighted the agency's basalt research, noting the promising global outlook for aerospace development in 2020. "Hawaii might be able to take advantage of some of those investments," the article stated. The article will appear in HB's March print edition.

## NexTech Program Tasks Students with Solving Plastic Problem



NexTech's first annual Fish Tank competition is under way and students are being challenged with solving a looming problem in Hawai'i: plastic pollution. Last year, the County of Hawai'i halted its plastic recycling program, leaving some 60 tons of plastic waste to be dumped into the local landfill each day.

Thirty-eight students from public, private and home-schools across Hawai'i Island are participating in the STEM challenge, learning about plastic waste and how engineering processes can offer solutions. With coaching from mentors, subject matter experts and local engineers, students are coming up with

solutions to pitch to a panel of judges on April 25 at the University of Hawai'i at Hilo. Teams will be judged according to their technical reports and presentations for prizes.

Adapted from the popular business reality TV show *Shark Tank*, Fish Tank challenges students grades 6 to 12 to work together to find solutions to locally relevant problems. Students get a chance to learn valuable skills like problem solving, collaborating, report writing and public speaking. Importantly, students also have opportunities to connect and build relationships with mentors in the community.

The program is made possible by the generosity of financial sponsors including Hawai'i Community Foundation, Okahara and Associates and Guidestar Engineering, as well as support from the University of Hawai'i at Hilo, County of Hawai'i, Rotary Club of Hilo, Big Island Engineers and volunteers.

For more information about NexTech and the Fish Tank Competition, visit [nextechhawaii.org/fishtank](http://nextechhawaii.org/fishtank).

*Above left: Students learn about plastic waste during a Fish Tank kick-off workshop on Jan. 11. Above right (L-R): Fish Tank volunteers Lisa Mason, Renee Ishisaka and Rebecca Choi. Below left (L-R): Kick-off event speakers Sanne Berrig (Hawai'i County Recycling Specialist), Eric Hagiwara (Wai'ākea High School teacher), Bill Kucharski (Hawai'i County DEM Director) and Bruce Meyers (President of Okahara & Associates). Photos courtesy of NexTech.*



## Women of Color National STEM Conference Coming to Hawai'i Island

A national collaborative to advocate for women of color in STEM pathways is coming to Hawai'i this month. The annual Women of Color STEM Entrepreneurship conference is scheduled March 18 to 20 on Hawai'i Island. [Registration is available online.](#)

The event is for entrepreneurs, academics, educators, venture capitalists, investors, college and graduate students, male allies, nonprofit leaders and others who are interested in addressing race, gender and ethnic disparities in computing.

The goal of the event this year is to plan a 10-year map to create a more equitable system for underrepresented girls and women of color in STEM fields. Attendees will get a chance to collaborate with local girls to learn about cultural barriers, culturally inclusive practices to support minority women in computing, and how to foster cross-disciplinary coalitions to affect change. Young women attending the event will be able to connect with mentors, find inspiration and networking opportunities.

The guest speakers will include: Ka'iulani Murphy, Hōkūle'a crewmember and UH Mānoa instructor; Ka'iu Kimura, executive director of 'Imiloa Astronomy Center; Laurie Rousseau-Nepton, resident astronomer at Canada-France-Hawai'i Telescope; Ko'olaupoko (Kiana Frank), a microorganisms scientist; and Brenda Darden Wilkerson, president and CEO of AnitaB.org.

### Letter from the Director

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STARS (STEM Aerospace Research Scholars) Program this summer, scheduled July 6 to 11. The funding provides meals, transportation and housing for 12 local high school girls who will spend a week exploring STEM careers with women across Hawai'i Island to learn about work, internship and education opportunities available to them. This will be the seventh annual program and it has been gaining momentum with support from local women scientists, engineers and educators who give their time and energy to support the camp. We look forward to providing a memorable and impactful experience to our students this year!

A hui hou,



Rodrigo Romo  
Program Director



4<sup>th</sup> Annual National STEM Collaborative

## Women of Color in STEM Entrepreneurship Conference

Wahine: Culturally-Responsive Collective Catalyst

# Island of Hawai'i March 18-20 2020

