



Society for the
Advancement of
Material and Process
Engineering

SAMPE Los Angeles Chapter News and Information



March
2022

Composites Used in Non-Aerospace Industries



Presented by Dr. Thomas Tsotsis
March 22, 2022 (Tuesday) at 6:00 PM

Date:

3-22-22 (Tues)

Time:

6:00 PM PST

Reservations:

Register for the
Zoom presentation.

Registration link at:

You are invited to a Zoom meeting.
When: March, 22, 2022 06:00 PM Pacific Time (US and Canada)

Register in advance for this meeting at:

<https://us02web.zoom.us/meeting/register/tZUuc0itrTssHdX2LkdCdmFaMr0quE0L0XXg>

After registering, you will receive a confirmation email containing information about joining the meeting.

About Dr. Thomas Tsotsis



Dr. Thomas K Tsotsis is a Technical Fellow for Boeing Research & Technology in Huntington Beach, CA in Material and Structures Technology. He received his Ph.D. in mechanical Engineering and his M.S. in Chemical Engineering from Texas A&M University in 1989 and 1986, respectively. He received his B.B in Mechanical Engineering from Washington University in St. Louis in 1983. Dr. Tsotsis has over 30 years of experience in composites-materials development, testing, and analysis and has mainly been involved in the development of advanced preforming and liquid-molding technologies for composite material. Dr. Tsotsis has served as the Principle Investigator and/or project manager on multiple CRAD, IAD, and IRAD programs and has supported both BCA and BDS products. He is currently leading multiple IRAD tasks including a study to leverage Boeing's expertise in performing the resin infusion into affordable, integrated carbon-carbon structures. Dr. Tsotsis has been active in the development of an interlayer-toughening veil that is being used by Boeing Aerostructures Australia for the movable trailing edge of the 787 wing, for which he was a member of the team that won the 2008 JEC Innovation Award in Aeronautics and Space. Dr. Tsotsis has approximately fifty U.S. patents and over thirty publications in peer-reviewed journals and has written two book chapters on composites.

About the Presentation

An overview of the use and development of composites in non-aerospace industries will be presented showing how aerospace has benefited from these developments, especially the close links between boatbuilding and early airframes during the early Twentieth Century. These links will be further reinforced by showing lessons learned from the automotive, boating, and wind-energy markets that will be relevant to future developments in aerospace. Key insights tying these to future demands for improved affordability at higher rates of production than have historically been required of composites for aerospace will be discussed, emphasizing those of most significance. Comparisons to the maturation of aluminum alloys for aerospace will be given as a perspective to the types of changes that increased usage will require of composites and to set expectations over what type of timeframe such changes may occur. An outline of how internal Boeing efforts in composites developments align to meet these future needs will also be shown along with some general thoughts as to where the composites industry should place its focus to maximize the benefits of ongoing and future R&D efforts for aerospace. Particular emphasis will be placed on developments that offer step changes in performance, cost, and manufacturability or combinations of these.



One Of Boeing's Projects - Artemis

NASA, the United States, and the space industry are building increased access to and commercialization of opportunities in low Earth orbit; a return to the moon's surface by 2024 – this time to stay; and sustainable exploration of deep space, including the moon and Mars. We are committed to NASA's Artemis program and to the National Space Council's vision for continued American leadership and international partnerships in space.

Research underway on the [International Space Station \(ISS\)](#) that we built and sustain is enabling humans and technology to operate in space for months at a time. Commercial spacecraft such as our [CST-100 Starliner](#) will open a market for tourism and manufacturing in low Earth orbit, while increasing research conducted on the ISS. That will allow NASA and its partner agencies to focus on deep-space exploration missions.

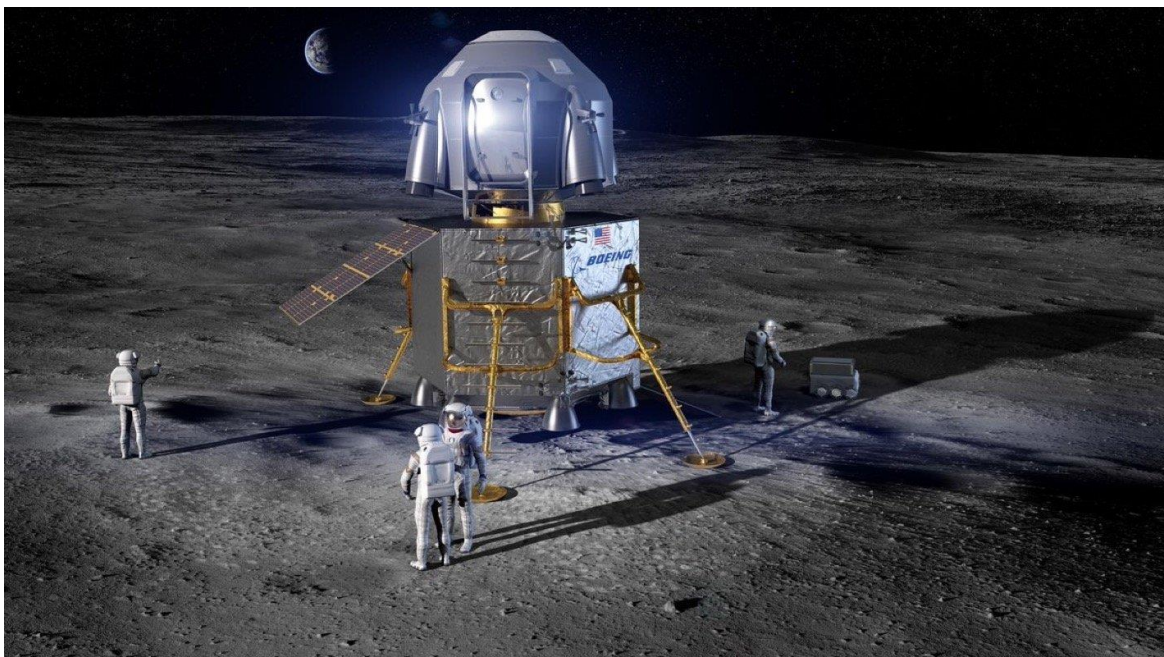
You'll need the most powerful rocket ever built to get people and massive payloads to the moon and Mars. NASA's [Space Launch System](#) is the size of a 38-story building and will produce 8.8 million pounds of maximum thrust at launch. We're providing its avionics, core stage and upper stages to support NASA's Artemis moon missions and make the next generation of human spaceflight possible.

We're designing a [Gateway](#) for cislunar space – the region between the Earth and the moon – to be a testbed and hub for robotic and crewed missions to the lunar surface and eventually to Mars. And we're conducting studies on surface modules and other technologies for lunar exploration.

[Going beyond Earth](#)

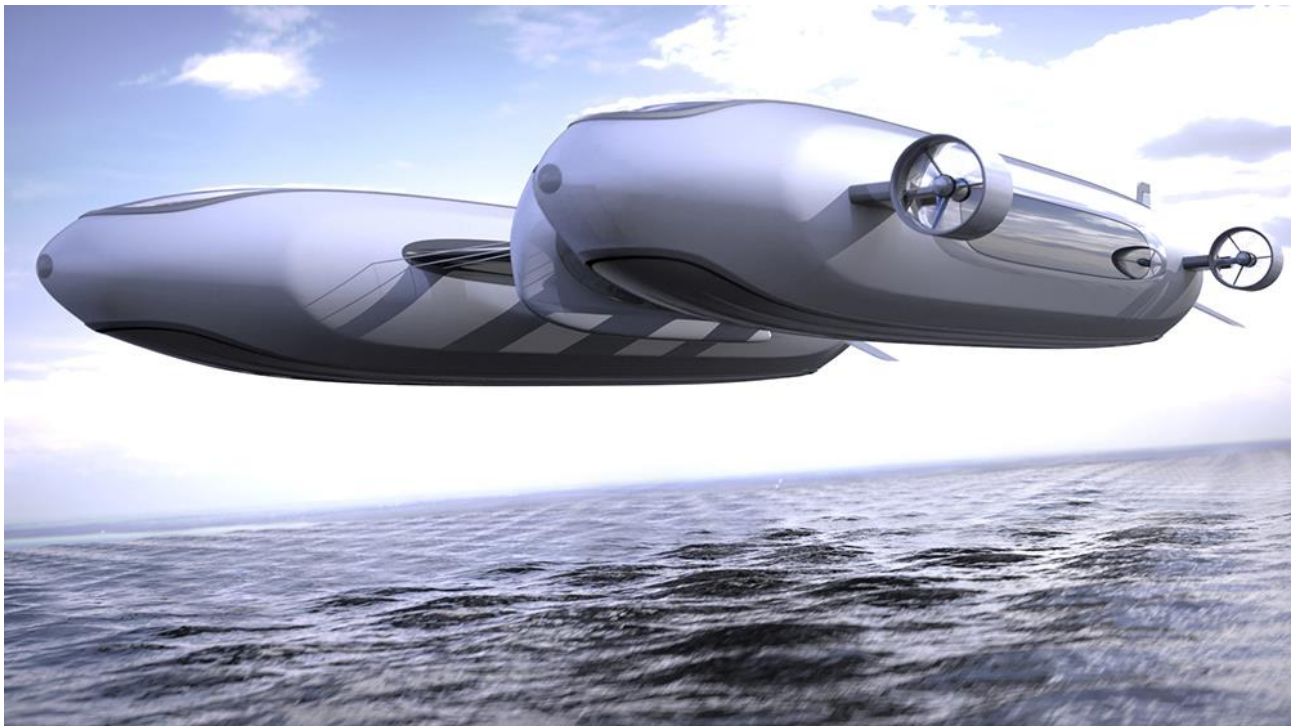
[#Artemis on @BoeingSpace](#)

[NASA Artemis](#)



Schedule of Upcoming Events

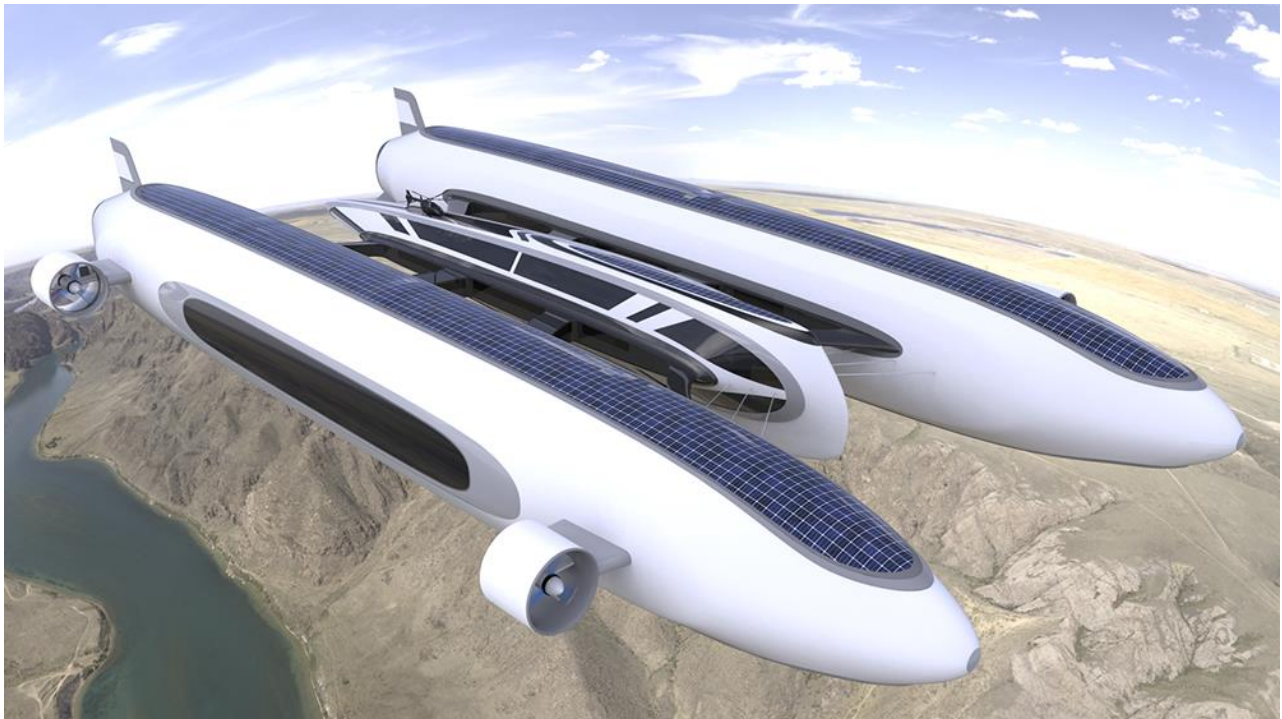
Event	Presented From	Date
Composites Used in Non-Aerospace Industries	Dr. Thomas Tsotsis (Zoom)	March 22, 2022
Medical Design & Manufacturing Show West	Anaheim, CA	April 12 – 14, 2022
Southern California Facilities Expo	Anaheim, CA	April 27 – 28, 2022
TechCon (Society of Vacuum Coaters)	Long Beach, CA	April 30 – May 5, 2022
Del Mar Electronics & Manufacturing Show	Del Mar, CA	May 4- 5, 2022
Space Tech Expo	Long Beach, CA	May 23- 25, 2022
CAMX	Anaheim, CA	October 10 -13, 2022
Anaheim Electronics & Manufacturing Show	Anaheim, CA	November 16 -17, 2022



The Air Yacht – A Bonkers flying superyacht concept powered by two helium blimps.



The Air Yacht can either fly or sail. The eight counter-rotating electric motors powered by ultra-light batteries and solar panels plus the helium tanks.



Irene Epstein Scholarship

The Irene Epstein Memorial Scholarship Awards were initiated in 1996 shortly after the death of Irene Epstein, to honor her volunteer efforts on behalf of the Society for the Advancement of Material and Process Engineering (SAMPE), and to recognize her strong desire to assist financially-needy, academically-deserving students at Fairfax High School (Los Angeles) to attend college to study engineering, science, mathematics, or medicine.

The Irene Epstein Memorial Scholarship Awards program was initially funded by contributions from The Aerospace Corporation and SAMPE. It is also supported by the Air Force Space Systems Manufacturing Problem Prevention Program (MP3).

The program is administered by Dr. Howard A. Katzman, Senior Scientist at The Aerospace Corporation, and Education Chairman of the Los Angeles Chapter of SAMPE.

Many individuals and companies have generously contributed to help the fund grow so the amount of the scholarship awards has increased five-fold since it started. In addition, a special Book Awards was introduced three years ago to help selected students in the purchase of their college textbooks. If you would like to make a donation or learn more about the scholarship, please contact Dr. Howard A. Katzman at 310-336-5860 or e-mail him at Howard.A.Katzman@aero.org.

Thank you all for your sponsorship and support of SAMPE – LA!!!

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For information on being a sponsor, please contact:

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