

# AEROSPACE

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# JET FUEL FROM SMOKESTACKS

One company's journey to a sustainable aviation fuel to meet the growing demand from airlines **PAGE 14**





TEXAS A&M UNIVERSITY  
Department of  
Aerospace Engineering

**Tenured/Tenure Track: Open Rank**  
College Station, TX  
*Tenure-Track or Tenure Review Upon Hire (either)*  
[apply.interfolio.com/87351](https://apply.interfolio.com/87351)

The Department of Aerospace Engineering, College of Engineering at Texas A&M University invites applications for a full-time tenured or tenure-track faculty position with a 9-month academic appointment, and the possibility of an additional summer appointment contingent upon need and availability of funds, beginning Fall of 2021. Applicants will be considered for the faculty titles of assistant, associate and full professor. Candidates should have expertise in: reactive flows, computational and numerical: computational combustion, computational propulsion, numerical algorithms and code development; experience using numerical simulations with high-performance computing and computers to understand and study reactive flows; all fluid regimes of interest, studies of fundamental reactive flow and combustion, as applied to energy, safety, and propulsion; experience in flame or shock and detonation physics.

The successful applicants will be required to teach; advise and mentor graduate students; develop an independent, externally funded research program, participate in all aspects of the department's activities, and serve the profession. Applicants must have an earned doctorate in aerospace engineering or a closely related science discipline. Strong written and verbal communication skills are required. Applicants should consult the department's website to review our academic and research programs (<https://engineering.tamu.edu/aerospace>).

Applicants must have an earned doctorate in aerospace engineering or a closely related engineering or science discipline.

Applicants should submit a cover letter, curriculum vitae, teaching statement, research statement, diversity statement and a list of four references (including postal addresses, phone numbers and email addresses) as part of the application package to be submitted for the above position at [apply.interfolio.com/87351](https://apply.interfolio.com/87351). Full consideration will be given to applications received by November 30, 2021. Applications received after that date may be considered until positions are filled. It is anticipated the appointment will begin fall of 2022. Questions regarding this position should be sent to Kathleen del Mar [kathleendelmar@tamu.edu](mailto:kathleendelmar@tamu.edu)

Texas A&M University is committed to enriching the learning and working environment for all visitors, students, faculty, and staff by promoting a culture that embraces inclusion, diversity, equity, and accountability. Diverse perspectives, talents, and identities are vital to accomplishing our mission and living our core values.

*Equal Opportunity/Affirmative Action/Veterans/Disability Employer committed to diversity.*

other domain, land and sea, before humans traveled routinely, those most resourced led the way. So, praise everyone making space more accessible to more people. However, when we explored land and sea, evidence shows that we did so to the detriment of the environment. So, we must continue to excitedly explore space and concurrently engage in behaviors and activities that maximize environmental protection and sustainability. Additionally, the only way that humanity can extend its expiration date as a species will be to figure out how to thrive elsewhere in the universe. Our expiration date could come as a result of several sources, from being too slow to address climate change, to a rogue asteroid wiping us out like the dinosaurs, or eventually, our sun going boom. Staying on Earth spells a guaranteed end for us, so we all need to get behind environmentally responsible space exploration. ★



**Faculty Positions in the Department of Aerospace Engineering**  
Embry Riddle Aeronautical University, Daytona Beach

The Department invites applications for several tenure-track faculty positions at the rank of Assistant Professor or Associate Professor. Successful applicants should demonstrate a potential to establish and grow a strong externally funded research program and to excel at teaching and mentoring graduate and undergraduate students. The preferred areas of expertise are astronautics & space applications, hypersonics & rocket propulsion, experimental aerodynamics as well as composites & additive manufacturing. In addition, the department is looking for potential faculty (possibly non-tenure track-teaching positions) interested in teaching design, i.e. spacecraft, rocket engine, airplane, and jet engine design. However, applicants in all areas of Aerospace Engineering will be considered.

Current research thrust areas of the Department include: astrodynamics, guidance, navigation and control, unmanned and autonomous robotic systems, urban air mobility, computational fluid dynamics, aeroacoustics, rotorcraft aerodynamics, flow control, alternative propulsion, air-breathing hypersonic and rocket propulsion, aeroelasticity, composites, nanomaterials, smart materials, structural health monitoring, computational structural mechanics, and design optimization.

The Aerospace Engineering Department, the largest in the nation with an enrollment of over 2,000 full-time students, offers Bachelor, Master, and Ph.D. degrees, including 42 students in the PhD program. The undergraduate program is currently ranked #8 and the graduate program is ranked #25 (tied) by the U.S. News and World Report. To achieve national prominence, the Department has launched an ambitious agenda focused on expanding the graduate programs, facilities, recruiting talented faculty, and building research infrastructure and capabilities. In support of this agenda, the University has invested in a new 50,000 square foot engineering building, the John Mica Engineering and Aerospace Innovation Complex (MicaPlex), housing several research laboratories (<https://erau.edu/research-park/micaplex/labs>) a state-of-the-art subsonic wind tunnel, and a new Flight Research Center facility, all as part of a Research Park with incubator space and growing number of industry creating an echo system to support innovation and entrepreneurship.

Embry Riddle Aeronautical University (ERAU), the world's largest, fully accredited university specializing in aviation and aerospace, offers more than 70 Baccalaureate, Master, and Ph.D. degree programs in Arts & Sciences, Aviation, Business, and Engineering. ERAU's eastern campus is located at Daytona Beach and serves a diverse student body of approximately 7,500 students.

Candidates should have an earned Doctorate in Aerospace Engineering or a closely related field. For non-tenure track positions, a PhD degree could be replaced by an MS and substantial industrial experience. Women and underrepresented minorities are especially encouraged to apply. Applicants must submit a single document that includes: (1) a cover letter, (2) a Curriculum Vitae, (3) teaching philosophy, (4) a research plan, and (5) the names and contact information of at least three references. For more information about the position and application process, please visit our careers site - <https://careers.erau.edu/> and click on Career Search to find requisition no. R301537. For full consideration, candidates are encouraged to apply before September 15<sup>th</sup>, 2021. Screening of the applications will start upon receipt and will continue until the positions are filled.

# JAHNIVERSE

## Why going to space doesn't always make you an astronaut

BY MORIBA JAH

**W**e'll know we're a space-faring species when rockets and spacecraft become normalized as modes of transportation on the same list with planes, trains and automobiles. July's historic space tourism flights could go down in history as steps toward that normalization, provided we can quickly settle the question of who should get to call themselves astronauts.

Minutes after landing, Richard Branson famously declared he and his fellow passengers were now astronauts, going so far as to have former Canadian astronaut Chris Hadfield pin Virgin Galactic astronaut wings onto each one of them. Likewise, Jeff Bezos declared himself and his passengers as astronauts.

So are they?

Not in my view. They are spaceflight passengers, and there should be no shame in that. I have many friends who are airline pilots, and when they aren't flying the aircraft, they sit somewhere in the cabin with people like me, as passengers. If you are an astronaut by trade, nothing precludes you from being a passenger at times too, such as when riding to and from the International Space Station on an automated craft.

In this debate, I'm not suggesting that we shake our fists at the sky because billionaires have achieved yet another thing in exclusivity and now want the astronaut title too. We should celebrate these flights as steps on the natural path toward space travel becoming commonplace.

So "booya" to Branson, Bezos, their families, friends and employees for these important steps. But if you go to space on a joy ride, that does not make you an astronaut. The FAA, which has the power to award "Commercial Space Astronaut Wings" to space flyers, seems to hold a similar view. Effective July 20, which happened to be the day of Bezos' flight, recipients must have conducted "activities during flight that were essential to public safety, or contributed to human space flight safety," the FAA said.

Though perhaps it's not discussed as much as it should be, being an astronaut comes with serious responsibilities. The Outer Space Treaty of 1967, considered the Magna Carta Libertatum of International Space Law, states that "astronauts shall be regarded as the envoys of mankind." An envoy is defined as an official representative of one entity or organization to another. Personally, I would find it a stretch to regard billionaires as official representatives of humanity regarding our extraterrestrial activities.

The treaty's wording about astronauts and their responsibilities should not be taken lightly. Governments, not private citizens, bear legal liability for how people behave and conduct operations in space.

You might have noticed that I haven't addressed what altitude one must reach to become an astronaut. That's because altitude is much less important than what one does in space. Jeff Bezos and the New Shepard passengers crossed the Kármán line 100 kilometers (62 miles) above mean sea level, the invisible boundary recognized by the Fédération Aéronautique Internationale as the start of space. That feat does not make them any more astronaut-like than the Branson passengers who settled for crossing the 50 mile (80 km) threshold recognized in the United States as the start of space.

I hope being called a passenger doesn't dissuade more rich people from taking these trips. In every



**Moriba Jah** is an astrodynamicist, space environmentalist and associate professor of aerospace engineering and engineering mechanics at the University of Texas at Austin. He holds the Mrs. Pearlle Dashiell Henderson Centennial Fellowship in Engineering and is an AIAA fellow. He also hosts the monthly webcast "Moriba's Vox Populi" on [SpaceWatch.global](http://SpaceWatch.global).

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