

Name: Jaykumar Vaidya

Code: 699

Home institution: University of Maryland, Baltimore County

Name of task: Mars Atmosphere and Volatile Evolution (MAVEN), Surface and Exosphere Alterations by Landers (SEAL), Lunar Environment Monitoring Station (LEMS), Modular Spectrometer for atmosphere and Ionosphere characterization (MoSAIC) Geospace Dynamics Constellation (GDC)



What do you do for CRESST: I have worked with CRESST twice and the latest work includes my work as a faculty at UMBC to serve certain NASA missions mentioned below. I am a ground systems equipment support engineer responsible for supporting SEAL, LEMS, DISSIPATION, MoSAIC, and MAVEN missions. One of the instruments that we send to space in the spacecraft is a quadruple mass spectrometer (QMS). In general, a mass spectrometer instrument that gets installed on the spacecraft is meant to measure the abundance of different materials in the atmosphere of Mars, and the moon of earth, and the work may extend to working on mass spectrometers that fly to other planets in our solar system. My work is mainly focused on mass spectrometer tuning, filament and detector testing, building ground support software and often tests to debug the spectrometer experiments. My former work at NASA GSFC was working as a SURA contractor to work for the astrophysics group (code 662) in building an atomic layer deposition reactor to grow a specific kind of mirrors that helps in imaging galactic halos in space.

Background: I am an electrical engineer by qualification and a researcher by experience in nanotechnology and physics. However, my current work involves mainly skills and knowledge from electrical and computer engineering. I am a master's graduate from the University of Virginia, and I have also been a researcher at the Tata Institute of Fundamental Research (India) which is one of the deemed research institutions for working in pure science.

I come from a quite peculiar background where education, gender equality and basic living needs are not considered important, so almost my life span has been spent battling and fighting for fetching the above-mentioned needs. For example, I have raised myself in extreme poverty and I have earned my own and my family's living since I was in class 6th. I come from Mumbai (India) from an extremely poor locality (slums) and I have had to fight many societal pressures to be able to continue my studies, earn living while being a college and undergraduate student for my family and most importantly, to achieve my dreams despite of the new set of challenges life threw at me. To sum up, more information about the same can be found [here](#). I believe engineers can best help those struggling for upward mobility against the bleak realities of poverty. [Thesis published on my life struggle](#) & a quick google search "[Jay Vaidya](#)" can tell more about me.

Favorite part of being a CRESST Scientist: One of the many things I like about working as a CRESST scientist is that it allows early-career researchers and graduate students to have exposure to working with research institutions like NASA. Also, I find the work culture progressive enough to continue my hard work every day. I think CRESST is the institution that I was looking to work in academic arrangements with universities and serving NASA missions, which is not something I found while I was working with a different employer on the east coast.

List of recent publications and presentations:

- 1) Vaidya, J. *et al. Sci Rep* **12**, 981 (2022). <https://doi.org/10.1038/s41598-021-04057-2>
- 2) Vaidya, J. *et al. Sci Rep* **12**, 2199 (2022). <https://doi.org/10.1038/s41598-021-03560-w>
- 3) Vaidya, J. *et al. Appl. Phys. Lett.* **119**, 133501 (2021) <https://doi.org/10.1063/5.0067684>
- 4) Vaidya, J. *et al. Sci Rep* **11**, 4462 (2021). <https://doi.org/10.1038/s41598-021-83806-9>
- 5) Bashar, M. K. *et al.* Preprint at <https://arxiv.org/abs/2109.09897>
- 6) Bashar, M. K. *et al.* Proceedings of the 2021 on Great Lakes Symposium on VLSI. <https://doi.org/10.1145/3453688.3461745>
- 7) Ghosh, S. *et al. Adv. Mater.* 2020, **32**, 2002220. <https://doi.org/10.1002/adma.202002220>
- 8) Sahu, S. K. *et al. 2D Mater.* **6** 025027. <https://doi.org/10.1088/2053-1583/ab0800>
- 9) Jindal, A. *et al. Sci Rep* **7**, 3295 (2017). <https://doi.org/10.1038/s41598-017-03408-2>
- 10) Vaidya, J. *et al.* Magneto-transport and chiral anomaly in Weyl semi-metals. *TAQM Conference*, 2018
- 11) Vaidya, J. *et al.* Magneto-transport in Weyl semimetals. *Mumbai Pune Semiconductor meeting*, 2018
- 12) Vaidya, J. *et al.* Electrical properties of exfoliated high Tc superconducting Bi₂Sr₂Ca₁Cu₂O_{8+δ} thin flakes. *Mumbai Pune Semiconductor meeting*, 2017

Recent awards won:

- Recipient of Junior Research Fellowship at Tata Institute of Fundamental Research, funded by Department of Science and Technology, India
- Recipient of Sir Ratan Tata scholarship for engineering students

A) News:

- 1) <https://engineering.virginia.edu/recent-ee-graduate-jaykumar-voidya-reflects-nasa-internship>
- 2) Featured on #NationalInternDay by Science Division at NASA
<https://twitter.com/NASAUniverse/status/1420779902958067735>
- 3) Story of my research at NASA Goddard and at University of Virginia became a [news highlight](#)
- 4) <https://americankahani.com/lifestyle/from-shantytown-to-space-jaykumar-voidyas-unlikely-journey-from-mumbai-slum-to-nasa/>
- 5) <https://www.indianeagle.com/travelbeats/mumbai-boy-jaykumar-voidya-usa/>
- 6) <https://www.thebetterindia.com/192914/mumbai-slum-boy-beats-poverty-us-university-scientist-inspiring-india/>
- 7) <https://mumbaimirror.indiatimes.com/mumbai/other/a-young-scientists-leap-from-kurla-slum-to-virginia/articleshow/70684461.cms>
- 8) <https://www.thebetterindia.com/192914/mumbai-slum-boy-beats-poverty-us-university-scientist-inspiring-india/>
- 9) <https://thelocalindian.com/story-feed/get-inspired/jaykumar-voidya-virginia-university/>
- 10) <https://www.thebetterindia.com/260501/inspiring-people-education-fight-poverty-bic-cello-stories/>
- 11) <https://news.careers360.com/how-electronics-repairman-became-scientist-at-top-university>
- 12) <https://www.amarujala.com/education/success-stories/jay-kumar-voidya-struggle-story-mumbai-slums-to-studying-in-university-of-virginia-us>
- 13) <https://www.patrika.com/hot-on-web/the-story-of-this-mumbai-boy-is-like-slumdog-millionaire-5042587/>
- 14) <https://leverageedu.com/blog/jaykumar-voidya/>

B) Interviews

- 1) <https://www.youtube.com/watch?v=hAKykeshDIQ>
- 2) <https://www.youtube.com/watch?v=a9lbZV502Ec>
- 3) https://www.youtube.com/watch?v=-kY_CIEYjdE