

# Interview with Dr. Shirin Haque, Astronomer and National Outreach Coordinator (IAU) University of the West Indies, Dept of Physics, St Augustine, Trinidad & Tobago

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Dr Shirin Haque was born in the village of Patna, India and came to Trinidad at the age of seven without being able to speak English and having no formal education. Dr Haque has pioneered the cutting-edge field of Astrobiology at the University of the West Indies and was interviewed by the BBC for a feature Science in Action for the research on the Pitch Lake, the largest natural hydrocarbon lake in the world. She is the founding member of CARINA (Caribbean Institute of Astronomy) and the founder/CEO of W.I.S.H. (Women In Science for Hope) Foundation. She holds numerous teaching and research awards regionally and internationally. She has also distinguished herself as a film producer with three science documentaries. She has hosted and produced two television series “Exploring our place in the Universe with Dr. Shirin Haque” and “Full S-T-E-A-M Ahead!” She is currently the editor of the magazine “The Intellectual – Art, Science and Architecture”. Her *Honours and Awards corresponds to:*

- Anthony N. Sabga Caribbean Awards for Excellence in Science and Technology 2020
- CARICOM Science Award 2018 – first female recipient
- Outstanding women of UWI Award – 2018
- Rudranath Capildeo Award for Applied Science and Technology - 2013
- “Women in Science and Technology” medal award from NIHERST - 2011
- Vice Chancellor’s Award for Excellence in Teaching 2005 - UWI
- Distinguished Teacher award from Association of Atlantic Universities - 2004



Figure 1. Dr. Shirin Haque at right with her Excellency the President Paula Mae Weekes of Trinidad & Tobago.

- UWI/ Guardian Life premium teaching award - 2002
- “The Most Outstanding Thesis Award, 1997 and 1998” UWI (PhD)
- Program Director for the NINE hub programme for the Caribbean through for the National Science foundation and NRAO.

**Based on your professional scientific knowledge and expertise, what are the new challenges that Caribbean astronomy face in science and technology? In your experience, what actions do you recommend to governments, universities, and society in general to increase vocations in astronomy?**

Astronomy has always faced a challenge as a career in the Caribbean region. While at the same time due to our location on planet earth in the equatorial region, we have some of the most spectacular skies being able to see large regions of the Northern and Southern hemisphere. There is no discipline that excites children and adults alike as Astronomy does. So, it is a marvelous gateway to the STEM fields. At the same time, few disciplines are seen less worthy of a vocation in the Caribbean as Astronomy! The thrust of jobs in the region remain in the tourism and entertainment sector with professional vocations being limited to being doctors, lawyers and engineers.

As such, one of the recommendations to push carers in astronomy is to link up with where there is main economic

activity, such as astrotourism. We currently do not have a thriving astrotourism industry but there is no reason why we cannot. The light and air pollution in the Caribbean is significantly less than in other parts of the world. Furthermore, we boast of wonderful tropical climate and stunning skies. The island of Grenada even has an archaeoastronomy site and again these are marvelous tourism activities that can engage the promotion of Astronomy.

Astronomy is generally seen as an eclectic expensive research-oriented discipline and the general shock reaction in the Caribbean is "You can do astronomy here?" With the advent of technology, astronomy has come down to Earth literally in cost and many of my friends and colleagues who are amateur astronomers are producing spectacular images, I daresay which many people at first sight think are Hubble images!

We need to sell the expertise that Astronomy can endow upon the people in our region. Astronomy develops skills in Mathematics and Physics and computing and programming – all of which are strong STEM skills and these skills become transferable and can be applied to a wide range of vocation.

To be able to enjoy the universe and feel a connection with it is a powerful thing. Imagine that this becomes the gateway to science – so critical for the future of humankind today.

### **Could you share with our readers a summary of the actions or projects in education and research carried out by your institution Astronomy issues?**

At the university of the West Indies, while astronomy has always had a presence, it has been limited to lone astronomers at the campuses. Jamaica and Trinidad has historically had astronomers. In the recent decades, I have been the sole professional astronomer at the University. Historically, the research in Trinidad was on data analysis on quasars. However, when I joined the academic staff after my PhD, one of the first change in direction we did was establishing a research grade observatory in St. Augustine. Our location being close to the equator allowed us generous views of the sky. This was in conjunction with Tuorla, University of Turku in Finland. The observatory is called SATU – meaning a tale too good to be true in Finnish and it stands for SA (St Augustine)-TU (TUorla). Here we did the dedicated monitoring of the monster binary black hole system OJ 287. We continue that to this day.

Subsequently, we got involved in Astrobiology seeking to understand how life could arise and sustain in other worlds by studying our own habitat as analogs. Here we explored the pitch lake in Trinidad as an analog to Titan, Saturn's largest moon and the mud volcanoes as analog to the environment on Mars. All this time, we continued to work in cosmology and solar astronomy as well. Graduate students were few and I have been the only professional astronomer still. The research is with collaborations with many foreign institutes in Germany, Finland and the USA etc.

We recently became a Caribbean hub for Radio Astronomy through the National Radio Astronomy Observatory (NRAO) and the National Science Foundation (NSF) in the USA.

Within the university, I designed and launched new courses "Introduction to Astronomy" and "Introduction to Astrobiology" which are popular among students. Over the years, we have run numerous workshops and short courses for teachers and the public in Astronomy. I am the National Outreach Coordinator (NOC) in the International Astronomical Union (IAU) and led the initiative to run a competition and name an exoworld. That has been a source of great pride to me! There is now an exoworld out there named Dingolay and Ramajay representative of our local culture.

I am a founding member of the Caribbean Institute of Astronomy (CARINA) and the UWI Stargazers – a campus astronomy club for outreach in Astronomy for students and the public.

Through these avenues we try as best as we can to reach out and spread the good word of astronomy. I have worked right across the Caribbean with these initiatives including producing and hosting two educational series on television on Astronomy and STEM. My pet project currently is a YouTube channel I launched over the covid-era which deals with Science and Astronomy for adults and children.

### **In these times, how can regional women and men scientist contribute to the management, and reinforcement of activities of scientific diplomacy, as well as to contribute to scientific dissemination, and popularization of science to achieve a more international visibility?**

This is an important question. As science is not given the prominence it deserves in the region. We continue to be seen as a region where tourism and its related activities is the mainstay. In Trinidad, the only careers seen as a pathway from science is to be a medical doctor or an Engineer. Yet, no people can progress without engaging in science to a meaningful level because of the era we live in. Questions of climate change affect our choices and behaviours as do our management of covid-19. These are all issues that affect us each personally seethed in science that each person needs to understand. Science literacy would reduce vaccination hesitancy. We fear what we do not understand.

So, how do we overcome these challenges? Everyone has to do their part and universities play a big part in this. We must engage in speaking and being ambassadors of science at all times. One of the downfalls is that the scientific mind and the political mind clash with each other. So rarely you find scientists in the political arena and vice versa. The politicians are the policy makers and this divide needs to be closed. It is particularly strong in the Caribbean. Although I must say, due to covid – more persons have listened to medical scientists than ever before and they have had more airplay than ever before in the media.

Achieving international visibility is indeed a challenge when literally you are a dot on the world stage with a population of 1.3 million! Yet, this can be done and many have done it and it is very important to be part of the global discourse. You become part of the global discourse by collaboration. Gone are the days of the sole researcher – we get a global presence and visibility on the international stage by collaborating with our peers with our unique contribution.

**Could you share some experiences that have been especially memorable in your scientific or professional career?**

The memorable moments become the ones you least expect! As such the moments that stand out for me, is doing an interview with BBC on astrobiology on our local sites of mud volcanoes and the pitch lake and most recently when Scientific American contacted me for remarks on a new study on Astrobiology. Being part of the team where we got a publication in the prestigious

journal Science in Astrobiology and international reports in the media we have been part of in the monitoring of OJ 287 is deeply meaningful.

Then of course, being awarded as the laureate for the Anthony Sabga Caribbean Award for Excellence in Science and Technology in 2020 was humbling and very emotional. That award is equivalent to a Caribbean version of the Nobel prize and it motivates one to give back as much as possible to the region that has presented this honour. It was presented by the president of the Republic of Trinidad and Tobago.

Another moment that stands out for me in how one can indirectly influence lives was when an elderly woman came up to me and gave me high-five repeatedly and said – “Power to women! I watch your show on TV on astronomy and I feel so proud to learn from you. I never had the opportunity as I had to care for the children and had no opportunity for education. So proud of you!” That truly choked me up and made all the effort at outreach every bit worth it.