Alok Chatterjee Honored by NASA
Shukla Sarkar

Chatterjee, a Bengali-American scientist, receives a highly prestigious NASA Exceptional Achievement Medal with citation for leading a successful collaboration between NASA and ISRO, India’s space agency. Shukla Sarkar interviews him.

Shukla: Alok, congratulations on this award from NASA. Can you explain what this award was for?

Alok: Thank you very much. The award was basically for initiating and leading the NASA Moon Mineralogy Mapper (M3) project in collaboration with India’s space program called ISRO, Indian Space Research Organization.

Shukla - Would you give me a few details about this project such as, how many people were involved?

Alok - It started by me talking to my ex- colleagues in ISRO because I used to work in the Indian space program in ISRO from 1973 to 1982. In 2003 President Kalam... called for collaboration with foreign countries for the Chandrayan mission ...I took it up with NASA management... With my leadership at JPL we put together a preliminary proposal that I then sent to President Kalam and ISRO management. Based on its scientific and exploration merits ISRO short listed M3 project for collaboration with NASA to be launched on the Chandrayaan-1 mission.

In 2005 spring, after six months of detailed proposal preparation and going through the NASA instituted rigorous and competitive review process, NASA selected and funded the M3 Project to fly on the Chandrayaan-1 mission. Thus the NASA-ISRO collaboration was born. Eventually about 50 people from JPL worked on this Project.
Interview with Alok Chatterjee

Shukla - Where is India’s space program compared to the rest of the world?

Alok - Believe it or not India’s space program is pretty mature and pretty productive in terms of what they have done with money they have spent. It is considered one of the best space programs in the world because they get big bang for the money they spend. They have been mostly application oriented for the general good of the Indian subcontinent in terms of resources, in terms of communication, in terms of weather forecasting, mapping resources-things like that. This is the first time that they went for a deep space, scientific mission. India’s space program was more oriented towards practical application in the beginning.

Shukla - Practicality such as?

Alok - Such as helping the farmers, the village school systems, medical systems of the country because there are remote areas which could not be reached by ordinary means it was best to reach by satellites-- beaming the education to primary schools and villages and also resource management--how much land is there, how much agricultural land is there, how much water resources are there-- so through satellites, they assess all the available resources and manage them in a more cost-effective manner. Similarly with communication, there are now televisions all over the country. Also weather forecasting is more reliable due to satellite technology. These were the kinds of areas they were very focused on and still is. But now they feel confident, ISRO has matured. They want to expand their horizons, so to speak and get into deep space scientific and exploratory missions.

Shukla - How far is India from manned space travel?

Alok - Chandrayan and so far all of India’s missions have been unmanned but now India has announced [that] they will get into the manned program and they’re probably thinking of putting an astronaut in earth orbit for the first time in 2015-2016 time frame.
Interview with Alok Chatterjee

Shukla - That’s not so far away.

Alok - They are building the infrastructure for that slowly... But having worked in ISRO in the past and recently for two years in Bangalore, I have seen signs that they really mean business in terms of launching astronauts and given China had already done that even from a political consideration it is imperative that India also does that.

Shukla - Briefly, what is the future of space travel? In terms of US plus the world – what is the big picture?

Alok: It is inevitable. For the general public as soon as it is economically viable, it will happen. It has the element of exploration and boldness to it... I think the human desire to explore will always propel the required technology and the economic means to undertake it.

Shukla - Very briefly, what in your opinion, is the realistic time frame for living on a planet?

Alok - The technology does exist to go and establish colonies but I think it is the financial constraint that we face. So that we cannot do a lot of things we want to do. It is very difficult to predict a timeframe for it given the economic uncertainties.

Shukla - Are there planets where life could exist?

Alok - In our M-3 project, we discovered water on the surface of the moon and subsequent NASA missions have proven that there is water inside the moon. Then it has been proven Mars has water frozen under the poles. So there are two bodies closest to the earth that have the basic element of water which can at least help habitataions. There are other bodies, JPL’s Galileo missions have proved there are a lot of water possibilities on Jupiter’s satellite Europa. It has possibilities of life that I think scientists have yet to fathom. The next NASA mission is to investigate the Europa- Jupiter mission and confirm that there is plentiful water on Europa and that can be utilized. This is just our solar system we are talking about and there are billions such solar systems out there. So in the distant future people may live on other planets.

Shukla - Will this be a reality in our lifetime or in our children’s life time?

Alok - No, definitely not in our lifetime. In our children’s lifetime maybe-- when they’re in their 50’s, 60’s, 70’s.

Shukla - What was your greatest challenge in the NASA-ISRO collaboration?
Alok - The greatest challenge was to bring the two organizations together. I feel very happy I was able to do that because of my past connections with ISRO and my established career in NASA I was able to convince the management to collaborate. First we had a very good project to collaborate on: an instrument that can potentially discover water on the moon. Eventually the challenge was for NASA to figure out how to work with India because the two cultures are different, work ethics are different, and the procedures are different. NASA was very curious to collaborate with India. That’s why they sent me there for two years to see how to work with India. The challenge was there but India’s ability in terms of scientific mind, capability, and technology made it very easy... NASA overall is happy with what has happened and I am sure in the near future both countries are looking for [more] collaboration.

Shukla - What was your greatest satisfaction?

Alok - The greatest satisfaction was, first of all, the establishment of relationship between NASA and ISRO for this project. Secondly, that we were able to work with India and both parties came out very happy. The sign of success was both were claiming they’ve done their jobs. Chandrayan carried eleven instruments, two of them from NASA. So carrying that many instruments was very successful. M-3, my project, was very successful because NASA was very happy to get the scientific data they wanted at a relatively low price. Because if they had to conduct their own mission it would have cost...
hundreds of millions of dollars whereas they got to ride on an Indian mission at one-tenth the price. So both organizations benefited from the collaboration in a win-win situation.

Shukla - Congratulations on being with JPL for 25 years

Alok - Yes, yes. Thank you.

Shukla - Just to give our readers the perspective, tell us about your tenure with JPL and did you do your graduate work in this country?

Alok - I worked in India for ten years basically from 1972-1982. Then I came to this country to do my graduate studies and joined JPL in 1985 and 25 years later here I am talking to you.

Shukla - It’s a great pleasure for us. Very briefly: what is your advice to young people who are interested in science?

Alok - Well, without the next graduation getting involved and trained, the space program will not go anywhere. We need very highly motivated, committed, passionate kids who have been trained in science and technology.

Shukla - What would your advice be to kids born and raised here?

Alok - My advice is that the parents be constantly aware that science and technology are very important elements for a child’s education and development... You can always excite kids with the planet you’re visiting, what you find on the planets, the possibilities of life, the possibility of other earth-like planets in other solar systems. Those are the possibilities that excite people. NASA, for its part has to be pro-active, collaborate with schools and colleges, and take road shows and involve the kids in scientific projects. Kids today should get involved in science and technology and take school and college courses that would make their work life very satisfying.

Shukla - Finally, are you aware of any scientific programs for children that would help them get such exposure?

Alok - There are high schools which are NASA sponsored and provide opportunities to indulge in space science. If you are particularly interested in space science you can choose a space grant university which is funded by NASA and the government, which provides enhanced, and space oriented education. Kids can also participate in NASA sponsored science events and contests. The information is available through various websites that kids and paranets can take advantage of. One such example is the JPL summer internship programs.