

*Those who refused to be lured by the West
and contributed significantly to India's growth.*

100 Great IITians

Dedicated to the Service of the Nation

Edited by Commander V.K. Jaitly

Pleased to be
featured



Anil Bhardwaj



IIT Guwahati



IIT Roorkee



IIT BHU



IIT Dhanbad



IIT Kharagpur



IIT Bombay



IIT Madras



IIT Kanpur



IIT Delhi

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Dedication

This book is dedicated to my parents, my family, friends and my teachers who have all played an important role in my evolution during different stages of my life.

This book is also dedicated to every Indian; from our hard working farmers in the fields, labourers building New Bharat, to the soldiers defending our borders and especially the Youth of India determined to make Bharat, the Vishwa Guru.

I would also like to dedicate this book to the great minds who created these institutions and the professors who nurtured the 100 Great IITians featured in this book, along with many others.

Most importantly, this book is my dedication to my Alma Mater, IIT Kharagpur and my beautiful country, India.

Foreword

I'm extremely delighted to learn that Commander V.K. Jaitly has made a brilliant effort of compiling a book about the stories of 100 illustrious IITians who unlike many others decided to stay back in India or came back to India and devoted more than 70% of their professional life in building our nation what we are today. They shunned the lure and comforts of the Western world and decided to face the ordeals of the licence raj of those days. I'm sure that this book would give a further philip to all the IITians to contribute their innovative mind for the nation building. This book has come at such an important juncture when India has surpassed many a nations to be the fifth largest economy and inching towards 5 trillion economy. It would encourage the young brigade of our country to blossom in various technical arena. I only wish, the technical innovation and its application in the long run bear the fruits which can be enjoyed by the last person in the remotest rural Bharat in consonance with the thought process and vision of our respected Prime Minister Sh Narendra Modi Ji embodied in his statement '*Sabka Saath, Sabka Vikas, Sabka Vishwas, and Sabka Prayas*'.



While writing this foreword, I remember the famous saying of our ex-President Dr A.P.J. Abdul Kalam that the ingenious knowledge and its application should translate into providing urban facilities in rural areas. Finally, let us pledge to walk the path of Dr Shyama Prasad Mukherjee's speech of 5th December, 1936 at the Nagpur University Convocation, "Generally speaking an Indian university must regard itself as one of the living organs of national reconstruction. It must discover the best means of blending together both the spiritual and the material aspects of life. It must equip its alumni irrespective of caste, creed, religion or sex with individual fitness not for its own sake nor for merely adorning varied occupations and professions but in order to teach them their individuality in the common cause of advancing the progress and prosperity of their motherland and upholding the highest traditions of human civilization." Here we remember Bharat's great saint

Swami Vivekananda's famous words, "Give me passionate 100 young men who are full of energy and dedication and I shall revolutionise the whole country." These 100 IITians exemplify that noble spirit. Let the new Bharat awake all the way in our thought process after reading the stories of these in *100 Great IITians: Dedicated to the Service of the Nation*

I am glad to know from the editor, Commander VK Jaitly that 40% of the profits from this book will be utilised for scholarship for economically weaker students from 23 IITs and 40% will go for the upliftment of tribal villages in the vicinity of IIT Kharagpur, the alma mater of the author. He wishes to donate 10% to PM CARES Fund and balance 10% will boost philanthropic activities directly undertaken by him and his wife, Mrs Neetu Jaitly. I highly appreciate this noble gesture and that will also set a great example for the current as well as future generations of youngsters.

This book will also dispel the perception that majority of the IITians go abroad and settle there and IITs are producing engineers basically for the Western world. The readers will find that IITians have gone in diverse fields and have made a mark wherever they have gone. I also recommend that the students striving hard for JEE and aspiring to get into the IITs must read this book and that will enable them to make a roadmap for their and nation's future.

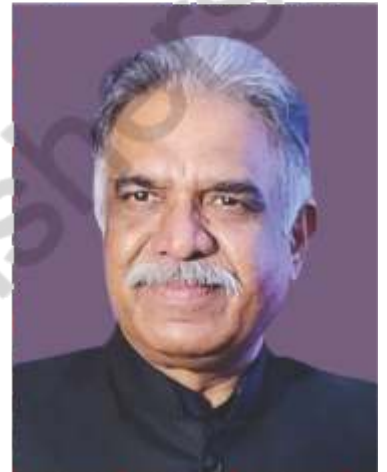
Jai Hind. Bharat Mata Ki Jai.

Anil Sahasrabudhe
Chairman NETF, EC-NAAC and NBA
Former Chairman AICTE

Preface

The first IIT was founded in August 1951 at the Hijli Jail complex on the outskirts of Kharagpur town in West Bengal and thus IIT Kharagpur got the distinction of being called the mother of the IIT system. Thereafter, the other IITs came into existence: IIT Bombay (1958), IIT Madras (1959), IIT Kanpur (1959) and IIT Delhi (1961).

The graduates from these IITs were considered the cream of the nation and a large number of them started going to the USA and a few to other western countries for higher studies and thereafter settled there only. The craze for getting into these institutes was unstoppable and JEE (Joint Entrance Exam) became the toughest examination in the world.



Sixth IIT came into existence in 1994 in Assam as IIT Guwahati. The oldest engineering college of the country at Roorkee became IIT in 2001. The famous IT BHU became IIT in 2012 and then Indian School of Mines, Dhanbad got the status of IIT in 2016. Now there are a total of 23 IITs in India. By the turn of the last century, IIT brand had become global and was acknowledged everywhere.

There has been always a perception that majority of the IITians don't stay back in India and go to the greener pastures for better job prospects. While the fact is that majority of the IITians stayed back in India though very few of them came to the limelight. This book will cover the stories of those IITians who refused to be allured by the glamour of the western world and stayed back in India or returned to the motherland after their higher studies or some job experiences. This book will be an eye-opener for those who accuse IITs of producing engineers more for the American economy and the other developed countries and not for the growth of India.

This book will serve as a great motivator for the present generation as well as future generations of engineers in particular and common public in general. This book will also inspire those who are still in school and aspire to get into one of the IITs. Even the parents who dream of their children getting into one of the IITs will find this book handy to inspire their wards. The existing IIT alumni numbering about 2.5 lakh plus may like to read a book like this. This book will definitely find a place in the libraries of about 5,000 plus engineering colleges in India.

There are hundreds and thousands of engineers from IITs who excelled despite the bureaucratic hurdles, corruption in the system and the Licence Raj mentality. This book is the compilation of the success stories of 100 Great IITians who made a great contribution to our nation, be it in the field of technology, R&D, governance, academic, defence, social/spiritual sector, art and culture, or in the corporate world.

The Indian system doesn't recognize **The Greats** so easily and particularly those who continue to pursue the road to excellence to achieve their mission with a focussed mind without much of expectations in return. Some of them achieved the required escape velocity and went into the orbit of glory, name and fame while majority of them have achieved remarkable milestones without the knowledge of the Indian media and the public in general.

It is high time that we acknowledge the services of those IITians who pushed the boundaries, dreamt what looked impossible those days and made it happen. These great IITians dared to dream for India.

When I entered the main gate of IIT Kharagpur first time in 1974, the one line that immediately caught my attention was **Dedicated to the Service of the Nation** inscribed on the front of the magnificent main building of IIT Kharagpur. While doing my B.Tech (Hons) in Electronics and Electrical Communications Engineering at IIT Kharagpur in 1974–79, the brain drain was the talk of the town those days and despite that there was a race amongst the final year students to apply for different universities in USA. Being from a very humble background, I was always against going abroad those days and we used to have long forays of discussions in the corridors of the hall and the institute.

My opinion was that we had been educated in the premier engineering college of the country at a tuition fee of just Rs 25/- per month and the balance huge amount of money for our studies came from the poor taxpayers' money. So, when the time had come to repay to our country, you just slipped away to the shores of a foreign country with the excuse that our country didn't have the required facilities for higher education, job opportunities and you opted for a lavish lifestyle stay in USA. What was the use of so much of higher technical education? Is it the purpose for which the founders of our nation established these IITs in post-Independence India?

While working on this book, I came across a large number of IITians in India and abroad who have contributed immensely to our country. There are some IITians based in US or other countries whose heart beats for India even today. I appreciate and salute such IITians who have not broken their umbilical cord from their alma mater and their motherland. Such NRI IITians

have in fact contributed to the whole world and have played a great role in boosting the image of our country globally. So in order to record the stories of those Great IITians, the work on another book titled: **100 Great Global IITians** has already started.

But the focus of this book is on those who toiled here, travelled in the locals of Mumbai or faced 20 hours of power-cut and still managed to run their small-scale industry in small towns like Nashik or Trichur or Ludhiana and climbed the ladders of success. While some IITians went into diverse fields of even spirituality, social service or politics, some of them also find a place in this book, though very selectively. The book covers the stories of such great heroes from all IITs of pre-2000 era who didn't give up despite the great ups and downs in their personal lives as well as in their professional lives. They stood against all odds posed by the abysmally slow and corrupt system of those times.

The selection of these 100 Great IITians was a real tough job. The shortlisting of the names was done through various alumni associations spread across the world. There are some individuals IITians/non-IITians who also recommended some names. Directors and Deans of Alumni Affairs from all the IITs were requested to suggest some names.

Fortunately, there exists a concept of the award of DA (Distinguished Alumnus) of the institute in all IITs. So we had to just delete the DAs who went abroad and settled there. So all the DAs who stayed back in India numbering about 300+ became great contenders to appear in the pages of this book. Majority of them are from the corporate and industry but then there are some from other diverse fields. All the ex-IITians who became Directors of some of the IITs or some other prestigious institutions or VCs etc also became strong contenders for an entry into this club of 100 Great IITians. All the existing Directors of various IITs were not considered for this book despite their great credentials. All the Padma Awardees have been included in this book except some who couldn't be contacted or some who were too busy to send their story despite many reminders.

While doing the research for this book, I came across some ex-IITians who had done a great job in their home/adopted town and even spread their business far and wide and had done a real commendable job but they were not on the radar of even their institute and so their contribution to the society and the nation was totally unknown. There are definitely some names whom the world may not know at all as of today but they will become instant celebrity the moment readers find their names in this book.

These stories will inspire the young minds and instil a sense of patriotism in their heart and create a sense of commitment towards our great country. Their stories will also echo the sentiments of thousands of others who may not have found their name in the book but they traversed the same path. They will be able to connect with some of them and therefore shall enjoy reading the book.

While we celebrated our 75th Anniversary of Independence as *Azadi Ka Amrit Mahotsav* and have entered *Amrit Kaal*, we all have to take inspiration from these 100 Great IITians and many more who could not be accommodated in this book. We, the youth of India, have to work hard so that by 2047, India will be a fully developed nation in all respects. We have to ensure that our lost glory is fully restored and there is no doubt that the whole world will acknowledge India as *The Vishwa Guru*.

Commander V.K. Jaitly
Editor

Management Consultant, Corporate Trainer, Motivational Speaker and Author

Chairman: C_cube Consultants

Board Member: IIT Bhubaneswar

UGC Nominee: As Finance Member of SRM University, Tamil Nadu

Advisory Board Member: PG Academy of Leadership, IIT Kharagpur

Advisor: SC School of Quality and Reliability, IIT Kharagpur

Advisor: Technology Students Gymkhana, IIT Kharagpur

National Coordinator: Youth4Nation

Chairman: Chamber for Indo Russo Technology Collaboration

Ex President: IIT Kharagpur Alumni Foundation (India)

Founder Board Member: PanIT India

Director-North Zone: I-Watch

Messages

Let me compliment Commander V.K. Jaitly for this work. Every IITian is great in his/her own way and choosing 100 IITians must have been very difficult. By documenting these stories, he has tried to remove the general perception that IITians just go abroad and contribute to the economies of USA and many other countries. Yes, our world is a global village now. But those who refused to go to USA or other countries and stayed back in India and contributed in a big way must be recognised. Our IITians, considered to be the cream of the nation went into diverse fields and contributed to build our country to the level what it is today. IITs were made for the development of our country immediately after Independence so those who have contributed should be recognised. I am sure that this book will inspire many youths to put their efforts in making India a fully developed nation by 2047.



—Prof V.K. Tewari
Director, IIT Kharagpur

IITs are possibly the greatest gift to the world from independent India. IITians over the years have contributed towards not only global technological developments but nation building and social transformation of India. Many IITians with their commitment to the nation and people of India have stayed back despite challenges of a developing nation. They have contributed towards India's self-reliance in different frontier technologies, excellence in education and research, transformations in social and economic fabric, strength in defence forces and novelty in creative endeavours. Leadership roles of IITians have ensured India's distinguished eminence in these areas. I was lucky to be part of the journey of many of these IITians. I am confident that this book will inspire many current and future IITians to contribute to towards making India a developed nation.



—Prof Santanu Chaudhury
Director, IIT Jodhpur

When Commander V.K. Jaitly ji requested me to give my remarks for his book, titled *100 Great IITians: Dedicated to the Service of the Nation*, it evoked a deep sense of immediacy, interest, and enthusiasm in me to find out the names and achievements of each of these great personalities. Upon availing them, I immediately decided to use this as my ready reckoner to derive my dose of inspiration. These great personalities are chosen across age groups, reaffirming the fact that success and achievement are a journey by themselves and in themselves when they are dedicated to the service of this great Nation. Because those who succeed and achieve inspire the rest of us to keep transforming and growing in the service of Bharath, our great nation.



—Prof V. Kamakoti
Director, IIT Madras

'Indian Institutes of Technology', the epitome of academic and professional brilliance, over the years, have moved beyond the sphere of imparting technological education par excellence and have played a crucial role in shaping the modern India by creating dedicated and diligent citizens. This book quintessentially is a tribute to the all the IITs and the great citizens they have created. This book is a manifestation of the contribution of the IITs and the IITians who have served the country with selfless devotion. I would like to congratulate Commander V.K. Jaitly for compiling this book, which will inspire the next generation with examples to emulate.



—Prof Shreepad Karmalkar
Director, IIT Bhubaneswar

The book is a compelling journey through the remarkable stories of individuals who chose to dedicate their expertise to the service of our nation.

While the author's 1970s IIT Kharagpur experience offers a valuable perspective, reflecting on that era's prevalent brain-drain discussions, the narrative put forth challenges the same. It emphasizes the untold stories of those who stayed committed to India's growth and have made significant contributions across diverse fields.

The book encapsulates the spirit of those who pursued excellence, often achieving remarkable milestones without widespread recognition.

100 Great IITians resonates widely, offering inspiration to diverse audiences.



—Prof B.K. Mishra
Director, IIT Goa

The research and educational ecosystem that the IIT system has built over the years has helped blossoming thousands of leaders across the globe, no matter what career paths they have chosen. The sojourn through this system has always been an endearing, enriching and transformative one for all alumni including myself. I understand that the evolutionary story of this system from the humble blue print of the Sarkar Committee Report to where it stands today is very important, but it is also important that we document the paths traversed by some of its most prominent alumni. This book by Cdr Jaitly is an effort towards that. I am sure that tomorrow's generation can draw inspirations from these stories and will embark on their own path to excellence.



—Prof Subhasis Chaudhuri
Director, IIT Bombay

I am very glad to learn that the book *100 Great IITians* authored by Commander V.K. Jaitly is being published. I learned from the preface that Commander Jaitly has done extensive research in identifying these 100 IITians whose contributions to the nation are significant. Being a professor of the IIT system, I know how privileged were IIT students. Not only were their studies subsidized but they were taught by the best of the professors, with the best of the facilities around. Thus there is a natural indebtedness for each IITian to pay back to the nation. But some are very lucky to become the beacon of such sacrifices. I wish all the best to Commander Jaitly that his sincere endeavour to publish this book will fulfill the objectives for which this book has been written.



—Prof Laxmidhar Behera
Director, IIT Mandi

This book on 100 IITians [who have contributed positively, immensely to their alma mater and to the country where they lived, over the past 72+ years] authored by Shri Veerendra Kumar Jaitly ji {a B.Tech Hons & M.Tech (Bachelor of Technology Honors & Master of Technology) Graduate from IIT (Indian Institute of Technology) Kharagpur} is very timely.

I'm fully confident that it will add immense value to the Diamond Jubilee (amRut MahOtsava) of the IIT System in general and IIT Kharagpur in particular. All my best wishes are there in this unique book venture by Jaitly ji.



—Venkappayya R. Desai
Director, IIT Dharwad, Karnataka, Bharat (i.e., India)

The book **100 Great IITians: Dedicated to the Service of the Nation** by Commander VK Jaitly will definitely remove the perception from the minds of so many people that IITs have contributed to the economies of the USA and other western countries only. A number of the IITians have contributed to the growth of India. I really compliment the efforts of Commander Jaitly for compiling these 100 stories. There are IITians who have contributed in the fields of industry, education, defence, R&D and even spirituality, politics and social work also. I am sure this book is going to infuse a fresh blood in the veins of thousands of startups coming up in India not only from IITs but from other engineering colleges also.



—Prof Abhay Karandikar
Ex Director, IIT Kanpur, Secretary, Department of Science and Technology (DST)

Commander V.K. Jaitly has been a star from his college days. His recognition of 100 IITians, is an out of the box thinking. This book should reach millions to know about the real techie heroes of IIT/ India.

Graduating from the IIT system in the mid-70s, having been part of international projects like Burj Khalifa, Dubai, I believe that industry collaboration helps academia to keep with the rapid advancements (as experienced by me). Secondly, being in the committee of the TT World Championships, I recognized the importance of the saying “healthy body for a healthy mind” to handle challenges on upgrading education and sports support, IIT would ensure holistic development. As technology advances and with hi-tech job opportunities in India, the brain drain issue of the past decades would reduce and leveraging the expertise of such retained, esteemed IIT alumni (like those in the book), we can ensure India’s great glory is revived in the global arena of science and technology.



— Rajah Venkatraman
President, IIT Kharagpur Alumni Foundation, India

IIT Kharagpur and subsequent IITs were created to bring India into modern times. This was a difficult goal for IIT system as India was a poor country and had negligible infrastructure and industries. However, now we know that in spite of the difficulties, IIT system, through their efforts, created graduates and postgraduates who helped India to make tremendous progress in diverse fields. This book beautifully highlights the efforts of 100 IITians out of thousands of them. Our goal as alumni, is to continue these efforts and make India as prosperous as any other developed country in the world.



—Asoke Dey Sarkar
President, IIT Kharagpur Alumni Foundation, USA

Congratulations to Commander Veerendra Kumar Jaitly for dedicating the humongous effort to identify, interview and compile the list of 100 Great IITians; those who contributed to the building of our nation. While the names of our alumni who have made us proud outside of India are known, those that stayed back to contribute to the building of our nation are not as visible. This book illuminates 100 of those IITians, and establishes that there are opportunities in our country as well for us to contribute and resolve social challenges. On behalf of PanIIT Alumni India and the larger IIT Alumni Community, I commend Cdr Jaitly once again for his dedication in making this book a reality.



—Debashish Bhattacharyya
Chairman, PanIIT Alumni India

I am glad to know that Jaitly has compiled a book of those great IITians who stayed back in India or returned to India after their higher studies or some job experience in countries like United States and others. I for some reasons continued to stay in United States and got its citizenship but however, let me tell you that my heart continues to beat for India. I try my best to contribute to my alma mater, IIT Kharagpur, to my village, to my state and to my country. So there are many IITians who have made a name for themselves and for their country at global level. We, the Indians in USA are a soft power for India. I am also happy to note that he is coming up with the sequel to this book, **100 Global Great IITians** with stories of those who have contributed globally. It must have been a very tough job for Commander Jaitly to compile such 100 stories.



—Ron Gupta
President, PanIIT USA

I am very glad to learn that the book 100 Great IITians authored by Commander V. K. Jaitly is being published. Being myself an IITian, and living last 30 years or so in Europe, I will like to say the respect and visibility which one gets is tremendous. Collection on 100 IITians whose contributions to the nation is a marvellous piece of work with an extensive and indepth research done by Commander Jaitly. Being a Director of a young generation as well as old generation IIT, I can say the way IITian contributing to nation as well as to their parent IIT is unparallel. I wish all the best to Commander Jaitly and hope that I will give this book more visibility to IITians in all Sector of life and inspire the young generation of India to achieve higher Standard Science based engineering education.



— Prof Rajeesh Ahuja
Director, IIT Ropar & Officiating Director, IIT Guwahati

Acknowledgements

This book is the result of my anguish that I felt so many times when I saw some IITians were doing such a commendable job in India but the same was not recognized even by their own alma mater at a level compared to their counterparts who had migrated to the Western world for greener pastures. This impression got further strengthened when the Deans and Directors visiting abroad used to narrate the stories of the lavish red-carpet welcome, they got from their ex-students. The financial support from these NRI IITians was also much more compared to their Indian counterparts till very recently. So, it was a feeling of neglect for the IITians who stayed back in India or who returned to their motherland after some studies abroad or job experience to serve their own parents or the nation, that gave birth to the idea of writing the stories of such Great IITians, majority of them were like unsung heroes. I would like to acknowledge their contribution to our country while presenting this book in your hands.

I must also acknowledge the contribution and support of a large number of Deans and Directors of various IITs with whom I interacted, and they immediately supported my idea of compiling the stories of such great IITians who decided to face the challenging situation in our own country and refused to be allured by the glittering life of the West.

Here I would like to thank Excel India Publishers who voluntarily offered to publish this book on a no profit basis so that maximum revenue generated from the sale of this book can go for the benevolent purposes for which the editor Commander V.K. Jaitly has committed. Let me convey my sincere thanks to our Minister of Education, Dharmendra Pradhan ji who appreciated the concept of this book when I met him to present my book: *We Can! We Can!* and the book by my mentor Sh Ravindra Nath Khanna ji: *Garage to The Globe* who created the Controls & Switchgear Company from scratch and is one of my inspiration for this book about 100 Great IITians. Director of IIT Kharagpur, Prof V.K. Tewari, Founder Chairman of PG Academy of Leadership, Partha Ghosh and its Chairman Prof S.K. Varshney, SEO Mr Pranav Patel were always very supportive for all the help when I conveyed them that 100% profits from the sale of this book will go for the social cause and the same will be managed through Partha Ghosh Academy of Leadership particularly disbursement of 40% for the economically weaker students getting admission in the 23 IITs and another 40% for the upliftment of the tribal villages in the vicinity of IIT Kharagpur. Whereas 10% will be deposited with PM Cares fund directly by me, another 10% will add to the small donations by me and my wife Neetu to organizations like Ekal, Sewa Bharti, Vivekananda Kendra, Youth4Nation etc.

This book wouldn't have seen the light of the day without the support of some IITians and even non-IITians who helped me in identifying these 100 Great IITians. Identifying the first 30 was very easy job who were very well known but identifying the remaining 70 was a herculean task. I am sure this process was subjective to a large extent. Every IITians is great and special in some respect or the other but with the help and suggestions of many, we could identify the remaining 70 also and I assure you that you will love reading their stories and shall get inspired. I feel we have missed some other great IITians due to oversight and we have covered the IITians of pre-2000 era only. So, maybe we shall come up with Vol II of the book covering the Great IITians of post-2000 era and may be whom we missed in this first book on the topic.

The list of those who helped me in this identification process is too long and just not possible to mention all the names here and I apologize for the same. However, I would like to mention the names of Pradeep Gupta, Sanjiv Kerkar, Ashank Desai, Kamendra Sharma, Prabhat Mitra, Capt Vicky Bhardwaj, Wg Cdr C.S. Sahdev, Cdr Ganesh, Bhabesh Sarkar, Satish Gupta, Sunil Khanna, Nitin Malhotra, Prof Damodar Acharya, Prof Ravikumar Bhaskaran, Dhananjay Kollur, Sunil Galtonde, Ramnath Mani, Ashok Srivastava, Abhijit Ray, Protip Ghosh, Late Pronob Guha, Lt Gen Vishwambhar Singh, Debashish, Hari Mohan Pillai, Devendra Jalihal, Ashish Mehta, Sanjoy Chakraverti, Durganand Thakur, VAdm S.K. Krishnan, Mukesh Garg, RAdm Rakesh Bajaj, Cdr Vijay Vadhera, Anurag Goel, B.B. Narang, Commander Neeraj Singla, K.K. Chopra and many more.

In addition to these, my special thanks to Ms Pragnya Chayani, Ajinkya Gavi, Ms Manasvi Jaitly, Satyabrata Sarkar, Brig Satish Sharma and Ms Sharon Sudhakar who wrote some stories for this book. I must thank Sanjay who himself got involved in proof-reading and his team of designers and printers in presenting you this book in this form. I would like to thank Archana for her contribution in designing of the book. In case of any inadvertent error, I would like to apologize in advance. In case of the main stories, they have been contributed by the IITians themselves or their representatives and they shall be responsible for the content contributed.

I am also thankful to the family members and friends of some of the IITians who contributed stories of those IITians who have left for heavenly abode after playing their innings in an excellent way for our country. I am sure their souls will find solace wherever they are when they see their stories in this book of 100 Great IITians.

I must thank my wife Neetu, daughters Megha and Manasvi, son-in-laws Karan and Abhishek grand daughters Aavya and Baani and grandson Rudraveer who all kept my spirits high and have been my strength in executing this mammoth task.

— Editor

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Anil Bhardwaj

92/Ph.D/IIT BHU

The Renowned Space Scientist



Dr Anil Bhardwaj is the third in the family of four, and the youngest son has only a sister younger than him. His two elder brothers are doctors by profession and are super-specialists in Neurosurgery and Neurology. Anil had his early schooling in Lucknow, except for a brief period in Delhi. He studied in Mahanagar Boys High School from 6th to 10th Grade and completed his Intermediate (12th Grade) from Lucknow Christian College. He went to Lucknow University for his B.Sc(1985) with Physics, Maths, and Statistics as subjects, and continued to complete his M.Sc(1987) in Physics with specialization in electronics and X-rays.

His training in X-rays became useful much later (after ~15 years) when he started working on X-ray emissions from planetary bodies and discovered X-rays from the Rings of Saturn, and the 'X-ray flares' from Jupiter and Saturn that have a direct linkage to X-rays emitted by the Sun. Many of his such works were valued in the form of the Shanti Swarup Bhatnagar Prize in the year 2007 in the field of Earth and Planetary Sciences.

Anil was always fascinated with electronics. He often used to try his hands to know about electronics-electrical appliances and gadgets at the house, with some of them going bad during opening and reassembling. He even tried making his transistor in the mid-80s for listening to music and songs he loved.

Around March 1986, the famous comet Halley had its visit to the inner solar system after 75 years, and it was a once-in-lifetime opportunity and a game-changer for Anil who was keen on watching the sky. He studied a bit about the comets and watched the comet Halley in the night skies of Lucknow.

During this period, the planet Uranus was being visited by Voyager-2—the first time a man-made spacecraft going closer to this planet. This had an impact on Anil as his thoughts started to imagine how it would be on Uranus.

All this led Anil to go for research in the area of planetary and space sciences at BHU's Indian Institute of Technology (IIT-BHU). He completed his Ph.D in 1992 from IIT-BHU on the topic 'Aurora and Airglow Processes on the Outer Planets and Comets' - where his curiosity about both comets and Uranus was dealt with by advancing our understanding of the physical and chemical processes occurring in their atmospheres. He even introduced the new terminology 'Aurora on Comets' in the field, and explained the new phenomenon 'Electroglow on Uranus'.

In 1993 Bhardwaj joined the Indian Space Research Organization (ISRO) as a scientist and an independent researcher at the Space Physics Laboratory (SPL) of the Vikram Sarabhai Space Centre (VSSC) in Trivandrum. He initiated research in Planetary Science at SPL-VSSC and developed it into a major program in ISRO. He established a talented planetary science research group in SPL-VSSC, which he nurtured from 2007 to 2013 as its first Head of the newly formed Planetary Sciences Division. Later on, he became the Director of SPL-VSSC in Feb. 2014. In between, he was invited to work at NASA Marshall Space Flight Centre, USA, for about 2 years during 2004–2005.



In the initial years after joining SPL-VSSC, Anil concentrated on the development of coupled chemistry-transport models for cometary coma, planetary auroral and airglow emissions, and Monte Carlo simulations of charged particle degradation in planetary atmospheres. Soon he expanded his activities to multi-spectral (covering X-rays, ultraviolet, visible, Infrared, to radio waves) observations of planetary bodies from space and ground. Through these unique efforts, he accomplished several landmark discoveries, like X-rays from the rings of Saturn (which were explained to be due to oxygen K-alpha emissions), and the first radio observation of Jupiter using Indian GMRT.

When India started discussing the plans to go to the Moon, Anil was involved from the beginning. He demonstrated his scientific leadership by proposing a unique Indo-Swedish experiment SARA to study the lunar energetic neutral atoms (ENAs) to study the solar wind-moon interactions in a novel way. The science from SARA has revolutionized our understanding of solar wind interaction with the Moon, producing more than 25 excellent publications, and 3 superb Ph.Ds in 3 countries (India, Switzerland, Sweden). He received the ISRO Team Achievement Award for the Chandrayaan-1 in 2008.



Again, for Indian first mission to Mars (Mangalyaan), Prof Bhardwaj showed his technical distinction by developing a mass spectrometer-based experiment MENCA in a record time of 18 months. MENCA has made the first in-situ measurement of the composition and neutral density distribution at low-latitude Martian evening-time exosphere and has discovered suprathreshold Argon on Mars. Currently, he and his team have experimented on the Chandrayaan-2, Chandrayaan-3, and Aditya-L1 missions of India, as well as on missions being planned now. In fact, he is the only scientist in the country whose (along with his team) scientific experiments (payloads) have been selected for every planetary mission of India.

In 2016, the Infosys Prize in Physical Sciences was awarded to Dr Bhardwaj for his outstanding contributions to the field of Planetary Science and Exploration.

In Feb. 2017, he was selected to lead the Physical Research Laboratory (PRL), Ahmedabad - the 'Cradle of Space Science in India' (established by Dr Vikram Sarabhai in 1947), as a young Director. At PRL he has initiated new research areas that are enriching space physics, planetary sciences, and astronomy in the country.

The Indian Institute of Technology (BHU) conferred their First Distinguished Alumnus Award on him in 2015. ISRO honoured him with the Outstanding Achievement Award (the highest award of ISRO in service) in 2017.

Currently, he leads the planning of planetary and space missions of India and is shaping diverse research through membership in several committees and the Governing Council membership of many elite research institutions in India.

Prof Bhardwaj has and is playing leadership roles in many international organizations, like AOGS, IAA, AGU, IUGG, URSI, and EGU, as well as COSPAR, and represents India at international forums related to planetary and space sciences and explorations.



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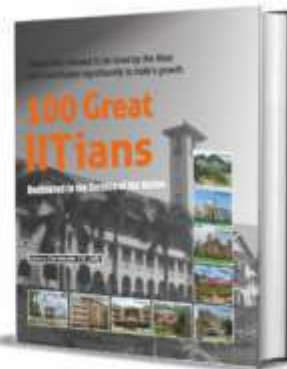


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