

Brief Curriculum vitae of Prof. Anil Bhardwaj, Distinguished professor

Date of Birth: 01 June 1967 **Nationality:** Indian
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(1) Employment History:

Feb. 2017 – Present : Director, Physical Research Laboratory (PRL), Ahmedabad, India
Feb. 2014 – Feb. 2017 : Director, Space Physics Laboratory, Vikram Sarabhai Space Centre (VSSC), Trivandrum, India
Sept. 2007 – Feb. 2014 : Head, Planetary Science Branch, Space Physics Laboratory (SPL), VSSC, Trivandrum, India
July 2002–Sept. 2007 : Senior Scientist, Space Physics Laboratory, VSSC, Trivandrum, India
Jan. 2004–Oct. 2005 : NRC Senior Research Associate, NASA Marshall Space Flight Center, USA [on Sabbatical]
Aug. 1993– June 2002 : Scientist, Space Physics Laboratory, VSSC, Trivandrum, India
Aug. 1987– July 1993 : Research Fellow, Indian Institute of Technology, Banaras Hindu University, Varanasi, India

(2) Education Degrees:

B.Sc. Physics 1985 Lucknow University 1st Class
M.Sc. Physics 1987 Lucknow University 1st Class
Ph. D. Applied Physics 1992 Indian Institute of Technology, Banaras Hindu University (IIT-BHU)
Ph. D. Thesis Title : "Aurora and Airglow Processes on the Outer Planets and Comets".

(3) Research Experience: > 35 years in Planetary and Space Science, and Solar System Exploration

Experiments on Indian Planetary and Space Missions:

- 1) **Principal Investigator (PI)**, Sub-keV Atom Reflecting Analyzer (SARA) on **Chandrayaan-1 - First Indian Moon Mission**.
- 2) **PI**, Mars Exospheric Neutral Composition Analyzer (MENCA) on **First Indian Mars Orbiter Mission (MOM)**.
- 3) **PI**, Chandra's Atmospheric Composition Explorer (CHACE-2) on the **Chandrayaan-2 Orbiter** mission.
- 4) **Supervision: XSM** on **Orbiter of the Chandrayaan-2 mission**; and upcoming (i) **ASPEX** (sensors, SWIS and STEPS) on **Aditya-L1 mission**; (ii) **APXS** on **Rover** and **CHASTE** on **Lander of the Chandrayaan-3 mission**.
- 5) **Currently Supervising:** (i) **DISHA Twin Aeronomy Mission**, and (ii) **instruments on future Venus, Moon & other missions**.
- 6) **Leading the future Planetary and Space Missions** experimental program of India.

Planetary Multi-Wavelength Astronomy using Ground- and Satellite-based Telescopes:

- 1) **PI** on **first radio observation** (obs.) of **Jupiter** using **Giant Metrewave Radio Telescope (GMRT)**, Feb. 2003.
- 2) **Co-I**, **Jupiter GMRT obs** May-June 2007, May-June 2008; **Co-PI**, **first GMRT obs. of Venus**, Jan. 2014, July-Sept. 2015.
- 3) **Co-I**, **Chandra X-ray Obs. (CXO) HRC-I Jupiter obs.** Dec. 2000; **CXO HRC-I obs Jupiter** 2001; **CXO ACIS and Hubble Telescope (HST) STIS Jupiter obs** Feb. 2003; **Co-I**, **CXO ACIS Saturn obs** Jan. 2004; **CXO HRC-I Earth** Dec. 2003-April 2004.
- 4) **Co-I** on **XMM-Newton X-ray obs. of Saturn** April & Oct. 2005; obs. of **Mars** Aug. 2016; **Pluto** in April-May 2017.
- 5) **Co-I** on **Multi-wavelength GMRT, NASA-IRTF, HST, IPRT, SPRINT-A, Nict 34m obs. of Jupiter**, Jan. 2014.

(4) Awards and Honors: [selected]

1. **Shanti Swarup Bhatnagar Prize**, in Earth and Planetary Sciences, 2007. [Highest Indian science award for < 45 years]
2. **ISRO Team Excellence Award** for **Chandrayaan-1 Science and Mission**, 2008.
3. **Indo-Swedish Project Award**, Swedish Research Council, 2010.
4. **Indo-Swiss Joint Research Program Fellowship**, 2010.
5. **ISRO (Indian Space Research Organization) Merit Award**, 2012.
6. **International Space Science Institute, Switzerland, Invited Expert**, 2012–2014.
7. **Distinguished Alumnus Award**, Indian Institute of Technology (IIT-Banaras Hindu University), 2015.
8. **Vainu Bappu Memorial (International) Award** of Indian National Science Academy, 2016.
9. **Infosys Prize** in Physical Sciences of Infosys Science Foundation, 2016. [Highest Science Award in India]
10. **Decennial Award** of Indian Geophysical Union, 2017.
11. **Outstanding Achievement Award** of **Indian Space Research Organization**, 2017. [Highest in-service ISRO award]
12. **J. C. Bose National Fellowship** of the Government of India (Science & Engineering Research Board), 2019.
13. **Prof. M. G. K. Menon Lecture Award** of The National Academy of Sciences, India, 2021.
14. **Chapter "A Rocket to Poke Martians"** on **Life and work of Anil Bhardwaj** in **Children's Book "They Made What?"**, 2021.
15. **Distinguished Alumni Award** of the **University of Lucknow**, Lucknow, 2022.
16. **Shree Pramukh Swami Maharaj Endowed Chair Professorship**, P.D. Patel Institute of Applied Sciences, CHARUSAT, 2022.

(5) Distinguished Lectures: [selected]

1. **Nehru Centenary Lecture** of the Kerala Academy of Sciences, 2007.
2. **Distinguished Lecture - Planetary Sciences**, Asia Oceania Geosciences Society, Japan, 2014.
3. **Dr. P. R. Pisharoty Memorial Lecture** of the Kerala Science Congress, 2015.
4. **Lunar and Planetary Society's Endowment Lecture** of Gujarat Science Congress, 2018.
5. **6th A. P. Mitra Memorial Lecture**, 2020.
6. **DAE - C V Raman Lecture** of the Indian Physics Association, 2021.

(6) National and International Fellowships of Science Academy/Union:

1. **Elected Academician (Fellow)**, International Academy of Astronautics (IAA), 2018.
2. **Elected Fellow**, National Academy of Sciences, India (NASI), 2014.
3. **Elected Fellow**, Indian National Science Academy (INSA), 2010.
4. **Elected Fellow**, Indian Academy of Sciences (IASc), 2009.
5. **Elected Fellow**, Kerala Academy of Science, 2013; Gujarat Science Academy, 2019; Astronautical Society of India, 2021.
6. **Elected Member**, International Astronomical Union (IAU), 2009.
7. **Elected Fellow**, Indian Geophysical Union (IGU), 2008.

(7) Membership in Professional Bodies:

1. **Member, American Geophysical Union** (since 1988).
2. **Member, Asia Oceania Geosciences Society (AOGS)**, since 2004.
3. **Life Member** of: (i) Astronomical Society of India, (ii) Kerala Academy of Sciences, (iii) Indian Society of Atomic and Molecular Physics, (iv) Plasma Science Society of India, (v) Indian Physics Association, (vi) Indian Science Congress Assoc., (vii) Astronautical Society of India, (viii) Indian Radio Science Society, (ix) Indian Planetary Science Association.

(8) Service to Scientific Community: [Selected]

1. **President, Planetary Science Section of Asia Oceania Geosciences Society (AOGS)**, 2006-2010.
2. **Founding President, Indian Planetary Science Association (IPSA)**, 2023 – .
3. **Vice-Chair, COSPAR Commission B**, 2012 – 2020.
4. **Member, International Academy of Astronautics - Commission 1** (Space Sciences), 2015–2017.
5. **Member, several Award Committees**, incl. SwarnaJayanti, Birla Science Prize, Bhatnagar Prize, CSIR awards, etc.
6. **AOGS: Chair Publication Committee 2006–2008; Member Committee: Awards 2014–2016; Publication, 2017– .**
7. **Member, Sunanda and Satimay Basu International Early Career Award Committee of AGU**, 2019– .
8. **Member, IUGG Union Commission on Planetary Sciences (UCPS)**, 2015–2019.
9. **Editor-in-Chief, Advances in Geosciences** (World Scientific), 2006–2013.
10. **Associate Editor, Advances in Space Research** (Elsevier), 2014–2020.
11. **Member, Editorial Advisory Board: Planetary and Space Science** (Elsevier), 2007–2009, *Space Science Reviews* (Springer) 2010– ; Book Series *Advances in Planetary Science* (World Scientific), 2015– .
12. **Member, Editorial Board, Molecular Astrophysics** (Elsevier), 2015–2020.
13. **Member of the Council of The National Academy of Sciences, India**, 2022– .
14. **Member, International Academy of Astronautics Permanent Committee on Moon Farside Protection**, 2022– .

(9) Professional Responsibilities: [selected]

- 1) **President, Indian Committee for International Union of Radio Sciences (URSI)**.
- 2) **Leader Indian Delegation : Portugal Science Summit**, 2017; *Indo-Israel Workshop on Astrophysics & Planetary Sci.*, 2019.
- 3) **Member, ISRO-NASA Planetary Science Working Group**.
- 4) **Member, Governing Council** : (1) *Indian Institute of Geomagnetism* (DST), Mumbai; (2) *Indian Institute of Astrophysics* (DST), Bangalore; (3) *National Centre for Earth Science Studies* (MOES), Trivandrum; (4) *Aryabhata Research Institute of Observational Sciences* (DST), Nainital; (5) *North-East Space Application Centre* (DOS), Umiam-Shillong; (6) *Institute of Seismological Research* (ISR) and *Electronics and Quality Development Centre* (Government of Gujarat), Gandhinagar.
- 5) **Member, Research Advisory Council** : (1) *CSIR-National Geophysical Research Laboratory, Hyderabad*; (2) *CSIR-National Institute of Oceanography, Goa*; (3) *National Atmospheric Research Laboratory* (DOS), Gadanki, (4) *National Centre for Polar and Oceanic Research* (MOES), Goa; (5) *The Maharaja Sayajirao University of Baroda, Vadodara*.
- 6) **Senate Member** of the *National Institute of Design* (Ministry of Commerce & Industry), Ahmedabad.
- 7) **Member, Management Board** of *Tata Institute of Fundamental Research* (DAE) **Balloon Facility**, Hyderabad.
- 8) **Chairman, INSA - International Science Council (ISC) Committee for COSPAR, SCOSTEP and URSI**, 2020– .
- 9) **Chairman, Projects Advisory Committee (PAC)** for the **International Cooperation Programs** of *DST*, India.
- 10) **Member, Senior Advisory Committee, Cosmic Ray Laboratory of TIFR (DAE)**, Ooty, 2022– .
- 11) **Member, ISRO APEX Science Board for Space Sciences and Exploration Research Programs of India**.
- 12) **Reviewer**, Proposals for National/International Projects, Grants, Programs, Telescope time; Referee for various Journals.
- 13) **Member, Gujarat State Audit Advisory Board**, 2020– .

(10) Research Guidance and Student Supervision:

Ph.D.s – 9 (Michael, Jain, Raghuram, Ambili, Das, Dhanya, Shreedevi, Mukundan, Smart)

Mentored : > 90 M. Tech., M. Sc., M. Phil. dissertations, and Academy SRF, Post-Doctoral Fellows, INSPIRE Faculty.

(11) Conferences, Outreach, and Social Activities: [selected]

- 1) **Invited Talks at Conferences**: >125 (>50 outside India)
- 2) **Session Convener or Member SOC of Conferences outside India**: >66; **Major Conferences Organized in India**: >35.
- 3) **Invited lectures** in Space and Planetary Sciences at workshops/courses/training programs : >200
- 4) **Public Outreach Lectures** delivered at Schools/Colleges, or Science Camps: >120 (addressed >80,000 students)
- 5) **Initiated new programs in PRL for underprivileged and girl students in rural areas**, impacted >30,000 students.
- 6) **Started VIKAS Scholarship** for 9–12 Grade Students for *rural and economically weaker sections of society*, 2020– .

(12) Publications:

More than 190 peer-reviewed Publications; 7 Chapters in Books; Edited 6 Books; Editor of 3 Special Issues of Journals; Reviewed Books; several Popular/General Articles.