


Brief Biodata

Name: Dr. Subhasis Panja

Designation:	Principal Scientist	
DP No. and Name:	6.01 Time & Frequency Metrology	
DU No. and Name:	6.0 Indian Standard Time	
Email:	panjas@nplindia.org	
Date of Joining CSIR-NPL:	5 th September 2012	
Phone (office)	(011) 47091589	

Research Area/ Interest

Atomic & Molecular Physics, Laser Physics, Ion Trap, Laser cooling, Atomic Clocks, Time keeping and time synchronization, Precise time and frequency transfer through optical fibre.

Educational Qualifications

(Please write latest qualification first)

Degree	Subject	University/ Institute	Year
Ph. D	Science	Indian Association for the Cultivation of Science	2003
M. Sc.	Physics	Jadavpur University	1998
B. Sc.	Physics (Hons)	University of Burdwan	1995

Academic / Research Experience

Grade / Post	Institute	Duration		Research Field
		From	To	
Principal Scientist	CSIR-NPL, New Delhi, India	Sept 2016	Till date	Development of Optical frequency standard based on single trapped ytterbium ($^{171}\text{Yb}^+$) ion. Precise time and frequency transfer through optical fibre link
Senior Scientist	CSIR-NPL, New Delhi, India	Sept 2012	Sept 2016	Development of Optical frequency standard based on single trapped ytterbium ($^{171}\text{Yb}^+$) ion.
Scientist-SD	ITER-India, Institute of Plasma Research, Gandhinagar, India	May 2009	August 2012	Plasma diagnostics and active spectroscopy.

Research Associate	Aarhus University, Aarhus, Denmark	June 2006	December 2008	Ion acceleration and fragmentation, Mass spectrometry
Research Associate	Osaka City University, Osaka, Japan.	April 2005	March 2006	Intact molecular ion production through ultrashort laser pulses
Research Associate	Max-Planck Institute for Quantum Optics, Garching, Munich, Germany	January 2004	December 2004	Ultrafast laser spectroscopy, white light generation
Research Scholar	Indian Association for the Cultivation of Science, Jadavpur, Kolkata, India	Sept 1998	December 2003	Photophysics and molecular spectroscopy

No. of Publications

No. of Publications in SCI Journals	No. of Publications in non-SCI Journals	No. of Publications in Conference Proceedings	Books/chapter	Total
74	4	31	3	112

Selected Publications

<p>“Frequency stabilization of multiple lasers to a reference atomic transition of Rb” Scientific Reports (2022) doi.org/10.1038/s41598-022-24952-6</p> <p>"Loop Stabilized" Improved Transfer Cavity Based Laser Frequency Stabilization” IEEE Journal of Quantum Electronics (2022) DOI: 10.1109/JQE.2022.3150428</p> <p>“A novel technique for real-time estimation and compensation of phase-drift of RF signals transmitting through long coaxial cables” IEEE Microwave and Wireless Components Letters, 31 (2021) 1319</p> <p>“Studies on Temperature Sensitivity of White Rabbit Network-Based Time Transfer Link” MAPAN-Journal of Metrology Society of India,doi.org/10.1007/s12647-021-00461-1</p> <p>“Precise Time Synchronization and Clock Comparison through a White Rabbit Network based optical fibre link” Radio Science (2021) DOI: 10.1029/2020RS007232</p>
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“An easy to construct sub-micron resolution imaging system”

Scientific Reports 10 (2020)21796 doi.org/10.1038/s41598-020-78509-6

“Optical atomic clocks for Redefining SI units of Time and Frequency”

MAPAN-Journal of Metrology Society of India doi: <https://doi.org/10.1007/s12647-020-00397-y>

“Atomic flux distribution from a low divergent dark wall oven”

Rev. Sci. Instrum. 90, 053202 (2019); <https://doi.org/10.1063/1.5090199>

“Estimation of the ion-trap assisted electrical loads and resulting BBR shift”

Scientific Reports, (2018) 8:16884 DOI:10.1038/s41598-018-35234-5.

“Design and construction of a helical resonator for delivering radio frequency ion trap

MAPAN-J. Metrol. Soc. India 32(2017)193; DOI 10.1007/s12647-017-0209-5

“Design of the Ion Trap and Vacuum System for ^{171}Yb -ion Optical Frequency Standard”

MAPAN-J. Metrol. Soc. India 30, 169 (2015).

“Measuring capacitance and inductance of a helical resonator and improving its quality factor by mutual inductance alteration”

Rev. Sci. Instrum. 86 (2015) 056104.

“On the formation of water-containing negatively charged clusters from atmospheric pressure corona discharge in air”

Int. J. Mass Spect. 292 (2010) 48.

“Carboxyl-catalyzed prototropic rearrangements in Histidine peptide radicals upon electron transfer: Effects of peptide sequence and conformation”

J. Am. Chem. Soc. 131 (2009) 16472

“The reduction of water clusters $\text{H}^+(\text{H}_2\text{O})_n$ to $(\text{OH}^-(\text{H}_2\text{O})_m)$ by double electron transfer from Cs atoms”

Phys. Chem. Chem. Phys. 11 (2009) 6125

“Experimental Evidence for an Inverse Hydrogen Migration in Arginine Radicals”

J. Am. Chem. Soc. 130 (2008) 7645

“A Soret Marker Band for Four-Coordinate Ferric Heme Proteins from Absorption Spectra of Isolated Fe(III)-Heme^+ and $\text{Fe(III)-Heme}^+(\text{His})$ Ions in Vacuo”

J. Am. Chem. Soc. (comm.) 130 (2008) 11856.

“A new technique for time-resolved daughter ion mass spectrometry on the microsecond to millisecond time scale using an electrostatic ion storage ring”

Rev. Sci. Inst. 79 (2008) 023107.

“Dianions of 7,7,8,8-tetracyano-p-quinodimethane and perfluorinated tetracyanoquinodimethane: Information on excited states from lifetime measurements in an electrostatic storage ring and optical absorption spectroscopy”

J. Chem. Phys. 127 (2007) 124301.

“Extending the supercontinuum spectrum down to 200 nm with few-cycle pulses”

New J. Phys. 8 (2006) 177.

“Supercontinuum extending from 1000 to 250 nm, generated by focusing 10 fs laser pulses at 810 nm into Ar”

Appl. Phys.:B 80 (2005) 399.

“Exploring the location and orientation of 4-(N,N-dimethylamino) cinnamaldehyde in anionic, cationic and non-ionic micelles”

Chem. Phys. Lett. 368 (2003) 654.

“Photophysics of 4-N,N-dimethylamino cinnamaldehyde in AOT reverse micelles and exploration of its position and orientation”

Chem. Phys. Lett. 367 (2003) 330.

“Excited state photodynamics of 4- N, N-dimethylamino cinnamaldehyde: A solvent dependent competition of TICT and intermolecular hydrogen bonding”

J of Photochem and Photobiol A: 139 (2001) 5. 56.

“Modulation of photophysics due to orientational selectivity of 4- N, N-dimethylamino cinnamaldehyde β - cyclodextrine inclusion complex in different solvents”

Chem. Phys. Lett. 329 (2000) 377

Patents

Current Activities

(Not more than 100 words)

Development of Optical frequency standard or Optical Clock based on the interrogation of a single ytterbium (^{171}Yb) ion confined and laser cooled within a radiofrequency (RF) trap, commonly known as Paul trap.

Precise distribution of time and frequency signal through optical fibres over long distances utilizing White Rabbit Precision Time Protocol (WRPTP) technique.

Development of advanced technique for providing Indian Standard Time (IST) traceability across the country.

Honour(s)/Award(s)/ Fellowship(s)

- Winner of the **Elsevier Ph. D. Photo-scientist** award and the Travel Bursary of Elsevier Science, Nara, Japan.
- Awarded **Max-Planck Institute Fellowship** by Max-Planck Institute for Quantum Optics (MPQ), Germany.

Contributions to AcSIR

- Coordinator of three credit course on “Quantum Optics and advanced solid state devices”
- Involved in class room teaching and practical classes for the Ph D students on “Quantum Optics”
- Supervising Ph. D. Students
- Supervising Master Students

Membership of Professional Societies/ Institutions

Fellow & Life Member of Metrological Society of India (**MSI**)
Senior Member of International Union of Radio Science (**URSI**)
Life Member of Indian Physical Society (**IPS**)
Life Member of Institute of Science Education and Culture (**ISEC**)
Life Member of Indian Radio science Society (**InRaSS**)
Member of Institute of Electrical and Electronics Engineers (**IEEE**)

Any other Information

(Not more than 100 words)

Projects:

1. Research and Development on Single Trapped Ion based Frequency Standard (Principal Investigator)
2. A system to generate a common synchronized clocks using CVGNSS with an uncertainty of few ns at geographically disturbed sensor nodes (Principal Investigator)
3. Development of timing laboratories of Legal Metrology Department (LM) traceable to National Time Scale generating IST at five locations and creation of one disaster recovery center. (center coordinator)