# Brief Biodata

## Name: Dr.Anuj Krishna

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|---|---|---|
| **Designation:** | **Senior Scientist & Assistant Professor (AcSIR)** |  |
| **DP No. and Name:** | **5.03, Chemical and Food BND Group D#5.03** | |
| **DU No. and Name:** | **5.0, IRM(BND) Division** | |
| **Email**: | **anuj.krishna@nplindia.org** | |
| **Date of Joining CSIR-NPL**: | **21st February 2018** | |
| **Phone *(office)*** | **+91-11-47091129** | |

## Research Area/ Interest

**Crystal Growth for Nonlinear Optical and Thermoelectric Applications & Materials Characterization, Nano-materials for UV-Shield applications, Materials Science and Engineering, Chemical and Food Indian Reference Materials (BNDs), Chemical & Materials Metrology, Electronics Engineering, MATLAB, C , Basic, SQL /PL SQL programming.**

## Educational Qualifications

| S.No. | Examination/ Degree | Subject | Class Marks % | Year | University | Additional Particulars |
|---|---|---|---|---|---|---|
| 1. | **PhD (Engg.)** | Engineering Sciences **(Specialization in Materials Science and Engineering)** | 1st Class | 2018 **(Awarded on 28th September 2018)** | AcSIR, CSIR-NPL, New Delhi | Awarded with **Best Thesis Award** |
| 2. | **M. Tech** | Advanced Materials Physics and Engineering | Distinction 85.80% | 2013 | AcSIR, CSIR-NPL, New Delhi | Distinction |
| 3. | **B. Tech** | Electronics and Communication Engineering | 1st class with Distinction 81.40% | 2011 | CUSAT, Kochi | Distinction |

## Academic / Research Experience

| Grade / Post | Institute | Duration | | Research Field |
|---|---|---|---|---|
| | | From | To | |
| Senior Scientist & Assistant Professor (Engineering Sciences) | CSIR-National Physical Laboratory, New Delhi | 21.02.2022 | Till Date | Chemical and Food Bhartiya Nirdeshak Dravyas (BNDs), Chemical Metrology, Crystal Growth & Characterization, Nano materials. |
| Scientist & Assistant Professor (Engineering Sciences)[(AcSIR) since August 2021] | CSIR-National Physical Laboratory, New Delhi | 21.02.2018 | 20.02.2022 | ----------Do---------- |

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|---|---|---|---|---|
| Quick Hire Scientist (Trainee) | CSIR-National Physical Laboratory, New Delhi | 08.08.2011 | 10.07.2017 | Crystal Growth & Materials Characterization |

## No. of Publications

| No. of Publications in SCI Journals | No. of Publications in non-SCI Journals | No. of Papers presented in Conferences/Abstracts | Books | Total |
|---|---|---|---|---|
| 22 | 0 | 31 (With two invited talks) | 2 (Chapters) | 55 |

## Selected Publications

1. Establishment of SI Trace ability and Certification of CRMs/BNDs of Aqueous Elemental Solutions Produced In-house and Through RMP Under Metrology in Chemistry Programme at NPL,India. S.Swarupa Tripathy, D.D.Toppo, **Anuj Krishna** et.al. **MAPAN -Journal of Metrology Society of India.** DOI:10.1007/s12647-023-00632-2**.** (2023) **[IF.- 1.446]**
2. Growth aspects and characteristic properties of L-ascorbic acid single crystal: potential candidate for nonlinear optical applications. Vinod, **Anuj Krishna,** et.al. **Journal of Materials Science: Materials in Electronics.** 34:143, January (2023).**[IF.- 2.779]**
3. Crystalline perfection and mechanical investigations on vertical Bridgman grown Bismuth Telluride ($Bi_2Te_3$) single crystals for thermoelectric applications. **Anuj Krishna**, N.Vijayan, Budhendra Singh, Kanika Thukral, K.K. Maurya. **Material Science and Engineering A,** 657C., January, 2016., 33-37. **[I.F.- 6.044]**
4. Futuristic Role of Bhartiya Nirdeshak Dravya an Indian Reference Material on Safety and Quality of Food Products. **Anuj Krishna**, S.S. Tripathy, Vinod, Nahar Singh. **MAPAN - Journal of Metrology Society of India, SI: Certified Reference Material for Scientific and Industrial Application.** February, 2022 DOI: 10.1007/s12647-022-00539-4. **[IF.- 1.446]**
5. Single crystal growth of l-tartaric acid and its characterization for optical applications. Naghma Khan, N. Vijayan, Kopal Shandilya, Ravinder Kumar, **Anuj Krishna**, et.al. **Journal of Materials Science: Materials in Electronics,** 31., Feburary, 2020., 4494–4502. **[IF.- 2.779]**
6. An efficient piezoelectric single-crystal L-argininium phosphite: structural, Hirshfeld, electrical and mechanical analyses for NLO applications. Sonia, N. Vijayan, Mahak Vij, **Anuj Krishna**, et.al. **Applied Physics A,** 125:363., April, 2019,1-14. [**I.F.- 1.784]**
7. Crystalline perfection, thermal, mechanical and optical investigations on solution grown L-arginine monohydrochloride single crystal, **Anuj Krishna**, Sonia, N.Vijayan, et.al. **Journal of Materials Science: Materials in Electronics,** 28(5)., November, 2017.,4306-4312. **[I.F.- 2.779]**
8. An in-depth study into the growth aspects and characteristic properties of ethyl 4-amino benzoate: a potential candidate for electro-optical applications. **Anuj Krishna**, N. Vijayan, et.al. **New Journal of Chemistry,** 41 (19).,August, 2017., 10908-10918. **[I.F.- 3.069]**
9. In-depth behavioral study of l-Prolinium Trichloroacetate single crystal: An efficient candidate for NLO applications. Kanika Thukral, N. Vijayan, **Anuj Krishna**, et.al. **Arabian Journal of Chemistry,** 12(8)., October,2016., 4887-4896. **[I.F.- 3.298]**
10. A comparative analysis of chromium doped L-alanine cadmium chloride monohydrate single crystal using X-ray diffraction, thermal and optical techniques for nonlinear optical applications. **Anuj Krishna**, N.Vijayan, et.al. **Optik,** 127(8).,April, 2016., 3723-3726. **[I.F.- 1.914]**
11. Effect of ampoule support on the growth of organic benzimidazole single crystals by vertical Bridgman technique for nonlinear optical Applications. **Anuj Krishna**, N.Vijayan, et.al. **CrystEngComm,** 18(25).,May,2016., 4844-4850. **[I.F.- 3.382]**
12. Enhancement of thermoelectric figure of merit in $Bi_2Se_3$ crystals through a necking process. S.Gupta, N.Vijayan, **Anuj Krishna**, et.al. **Journal of Applied Crystallography.** 48.,March2015.,533-541. **[I.F.- 2.867]**
13. Synthesis and nucleation studies on L-leucine hydrobromide: A promising nonlinear optical material. R. Rani, K. Thukral, **Anuj Krishna**, et.al. **Journal of Applied Crystallography.** 47(6).,December

2014., 1966-1974. **[I.F.-2.867]**

14. Key Aspects of L - Threoninium picrate single crystal: An excellent organic nonlinear optical material with a high laser-induced damage threshold. **Anuj Krishna**, N.Vijayan, Shashikant Gupta, et.al. **RSC Advances,** 4(99).,October 2014., 56188-56199. **[I.F.-3.049]**
15. Phase matching, X-Ray topography, optical and thermal analysis of L-alanine cadmium chloride monohydrate: a nonlinear optical material, **Anuj Krishna**, N. Vijayan, et.al. **Applied Physics A,** 114(4)., August,2013., 1257-1265. **[I.F.- 1.784]**
16. Nucleation kinetics, growth, mechanical, thermal and optical characterization of sulphamic acid single crystal. Suraj Karan Jat, N. Vijayan, **Anuj Krishna**, et.al. **CrystEngComm,** 15(46).,September,2013., 10034-10042. **[I.F.- 3.382]**

## Patents

**One Filed**

**A Microbial UVC Disinfection Casket: Inventors:** Dr Nahar Singh, Dr. Rajesh, Mr. Virendra Kumar Jaiswal, Dr. Parag Sharma, Dr. G.Sumana, **Dr. Anuj Krishna**, Dr.Radhakrishnan SR, Mr. Devesh Kumar Shukla, Mr. Anuj Purohit, Mr. Shubham Rathore, Dr. D.K. Aswal **(Patent Application no : 202011021206; Filed:20th May 2020, Published:26th November 2021)**

## Current Activities

- As a step towards development of quality infrastructure of our country and to achieve nation's goal of **import substitution,** presently involved in the development and validation of **Bhartiya Nirdeshak Dravyas (BNDs) - Indian Reference Materials** in the area of **aqueous elemental solutions** and **food products** as team member like BND for **toxic contaminant induced Basmati Rice flour** which was released on 4th January 2022 by CSIR-NPL.
- These BNDs are essential as they help in maintaining the proper level of elements in water, rice and also in preventing the deaths of human being because of water borne diseases and adulteration in food, allowing people to live healthy and safe.
- Further involved in the testing services provided to Delhi Jal Board for **Poly Aluminium Chloride (PAC) and Alum samples**.
- Involved in research on growth and characterization of single crystals for **Nonlinear Optical and Thermoelectric Applications, Nano-materials.**
- Handling of Sophisticated Analytical Instruments like Inductively Coupled Plasma Optical Emission Spectrophotometer (ICP-OES).

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

1. **DST-SERB-International Travel Support Grant (Young Scientist)** for attending and presenting poster at ICCGE-20 from 30th July to 4th August 2023 at Naples, Italy.
2. **Consolation prize** for Hindi Extempore competition during Vishwa Hindi Diwas -2023 by CSIR-NPL
3. **Consolation prize** for Hindi poem citation competition during Vishwa Hindi Diwas-2023 by CSIR-NPL
4. **3rd Prize for Vigilance Awareness Quiz at CSIR-NPL, 2022.**
5. **Best Thesis Award** in **International Conference on Solution Grown Crystals and Their Useful Applications -2021.** For the work contributed in PhD thesis entitled **"Crystallization and detailed investigations on characteristic features of organic single crystals for nonlinear optical applications".**
6. **Best Oral Presentation Award** at Young Scientists' conference organized during 22nd to 24th December 2020 as a part of **India International Science Festival 2020 under self-reliant India theme.** For the work for the growth of high figure of merit thermoelectric single crystals using special ampoule designs and for fabrication of thermoelement for the development of thermoelectric power generators (TEG) by **Ministry of Science and Technology, Ministry of Earth Sciences, and Ministry of Health and Family Welfare Govt. of India.**
7. **Consolation Prize** for Hindi Poem in **Hindi Pakhwara 2020.**
8. **Outstanding Performance Award-2018,** For dissemination of metrological traceability through BND of primary standard copper solution (BND 1003) by CSIR-NPL (In group).

9. **Outstanding Performance Award-2018,** For dissemination of metrological traceability through BND of Blaine fineness of OPC (BND 5001), PPC (BND 5002), PSC (BND 5003), and Fly ash (BND 5004) ) by CSIR-NPL (In group).
10. **1st (First Prize)** in **Science Quiz** during Hindi Pakhwara – 2016 by CSIR-NPL.
11. **Best Poster Award in XVIII National Seminar on Crystal Growth by Indian Association of Crystal Growth 2014** for work entitled "Synthesis, Growth and Characterization of LThreoninium picrate single crystal - A highly efficient nonlinear optical material."
12. **Best Paper Award in XVII National Seminar on Crystal Growth by Indian Association of Crystal Growth 2013.** For work entitled "Crystallization of L-alanine Cadmium chloride single crystals by slow evaporation method and its characterization for NLO Applications."
13. **CSIR-Senior Research Fellowship in Solid State Physics- 2014**
14. **IITB-Monash Academy joint PhD Fellowship- 2014.**
15. **CSIR QHS(T) Fellowship 2011.**
16. **3rd Prize in Installation Competition,** by CUSAT, Kochi 2010.
17. **Certificate of Merit for Outstanding performance in Class XII** awarded by Indian Oil Corporation Limited (IOCL) & Northern Railway Women's Welfare Organization, 2006.
18. **Certificate of Honor for highest in Social Science in AISSE 2004 examination in school** awarded by Lucknow Public School, Sec-I Lucknow, 2004.

## Contributions to AcSIR/HRD

1. **Assistant Professor** at AcSIR in Faculty of Engineering Sciences (since 2021)
2. Taking practical classes of **Metrology in Chemistry Course** of AcSIR at CSIR-NPL.
3. Guiding Three (3) PhD students of AcSIR
4. Guided Two (2) Summer Projects under JIGYASA program.

## Membership of Professional Societies/ Institutions

1. **Life Member** of Metrology Society of India (Membership No: LM 1193)
2. **Executive Member** of JIGYASA program being conducted in CSIR-NPL
3. **Member, Organizing Committee** CSIR-NPL Club Elections 2022
4. **Member, Poster Evaluation Committee 2022** for Class IX & X Schools under CSIR- JIGYASA program
5. **Member, Verification Committee** AcSIR-NPL Ph.D students admission 2022,2023
6. **Member**, **Evaluation Committee 2022** for Review Article of AcSIR-NPL Ph.D students
7.DAC Member for two PhD students of AcSIR

## Any other Information

Published in all 22 research articles in reputed National and International SCI journals, 2 book chapters and presented 31 papers with two invited talks in national and international conferences with citations 253, h – index of 10 and i10- index of 11 as per google scholar data. Also developed script for animated video, simulations for Virtual Lab under JIGYASA program of CSIR-NPL. Further acted as **Conference Chair and Co-Chair** for Indo-Korea Virtual conference on Development of Advanced Materials for Future Technologies (DAMFT-2020, 2021, 2022) and World Conference on Thermo-electrics and Materials (WCT) - 2023**.** Acted as **reviewer** for many International Journals like MAPAN, Journal of Materials Science: Materials in Electronics etc. Also worked as **Co-Convenor for R & D Conclave and Women in STEM** program under **One Week One Lab program of CSIR-NPL, 2023.**