


# CCS UNIVERSITY, MEERUT

## FACULTY PROFILE

|                  |   |                             |                  |                      |   |
|------------------|---|-----------------------------|------------------|----------------------|---|
| Name             | Dr. Anil Kumar Yadav  |                             |                  |                      |  |
| Qualifications   | CSIR-NET-JRF, Ph.D., Post Doc   |                             |                  |                      |   |
| Designation      | Assistant Professor   |                             |                  |                      |   |
| Department       | Physics   |                             |                  |                      |   |
| Address (campus) | Department of Physics, CCS University Meerut-250004                                     |                             |                  |                      |   |
| Contact no.      | <b>Office</b>   | <b>University extension</b> | <b>residence</b> | <b>Mobile</b>        |   |
|                  | <b>2192</b>   | --                          | --               | <b>+919627330381</b> |   |
| Fax              | -----   |                             |                  |                      |   |
| E-mail           | <a href="mailto:anilsaciitb@gmail.com">anilsaciitb@gmail.com</a>                        |                             |                  |                      |   |
| Webpage          | <a href="https://anilsaciitb.wixsite.com/anil">https://anilsaciitb.wixsite.com/anil</a> |                             |                  |                      |   |

### Educational Qualification

| Degree                            | Institution / University              | Year   | Subject  |
|-----------------------------------|---------------------------------------|--|--|
| Ph.D.                             | Indian Institute of Technology Bombay | 2014   | Title of thesis "Superconductivity in some FeSe based superconductors" |
| M. Sc                             | University of Allahabad, Allahabad    | 2004   | Physics (Specialization in Non-linear Optics)                          |
| B.Sc                              | University of Allahabad, Allahabad    | 2002   | Physics, Electronics   |
| Research Interests/Specialization |                                       | <ul style="list-style-type: none"> <li>Crystal Growth</li> <li>Superconductivity/thin film</li> <li>Nano-materials/Nono-generator</li> <li>Thermoelectric materials</li> <li>Topological Insulator/superconductor</li> </ul> |  |

### Career /Research Experience Profile

| Organization                                   | Designation                               | Duration         | Nature of work   |
|--|---|------------------|--|
| CCS University, Meerut<br>Uttar Pradesh, India | Assistant Professor                       | 2015 to till now | Academic and R&D   |
| Post Doc                                       | Indian Institute of<br>Science, Bangalore | 2014- 2015       | Growth and Characterization of<br>Topological Insulators           |
| Research Associate                             | Indian Institute of<br>Technology, Bombay | 2014             | Worked on Nb-based superconductor                                  |
| Space Application Centre,<br>ISRO Ahmedabad    | Junior Research Fellow                    | 2006 – 2008      | Involvement for Research and Development in<br>following projects: |
|  |   |                  | LISS-4 Camera ( <i>Resourcesat-2 Project</i> )                     |
|  |   |                  | MIP Camera ( <i>Chandrayaan-1 Project</i> )                        |
|  |   |                  | Schlieren Optical Set Up ( <i>Wind Tunnel<br/>Project</i> )        |

|  |  |
|--|--|
| <b>Teaching Experience<br/>(3.5 Years)</b> | <p><b>Subject taught at M.Sc. and M.Phil. Level</b></p> <ol style="list-style-type: none"> <li>1. <i>Condensed Matter Physics</i></li> <li>2. <i>Computational methods and Programming in Fortran 90</i></li> <li>3. <i>Classical Mechanics</i></li> <li>4. <i>Quantum Mechanics</i></li> <li>5. <i>Statistical Mechanics</i></li> </ol> |
|--|--|

| Research Supervision<br>(Year wise) | Year      | Awarded | Submitted | Working |
|-------------------------------------|-----------|---------|-----------|---------|
| Ph.D.                               | 2018      |         |           | 1       |
| M. Phil                             | 2015-2018 | 9       | -         | -       |

| <b>Books/Monographs</b> |      |  |                             |   |              |   |
|-------------------------|------|--|-----------------------------|---|--------------|---|
| Sl. No.                 | Year | Title/Sub Title  | Publisher                   | Place of Publication                      | Type of Book | Authors   |
| 1                       | 2008 | Development of large size Schlieren Imaging System (Prototype model) for Hypersonic wind tunnel project (HWTP) | SAC/SEDA/HWTP/14/07/2008/30 | Space Application Centre, ISRO, Ahmedabad | Monograph    | Pradeep Kumar, <u>Anil K. Yadav</u>               |
| 2                       | 2007 | Interferometry Aided Alignment & MTF Measurement of LISS-4 (Resourcesat-2) Three Mirror Bench Telescope        | SAC/EOSG/OSD/10/1/2007/03   | Space Application Centre, ISRO, Ahmedabad | Monograph    | Pradeep Kumar, M.P. Trivedi, <u>Anil K. Yadav</u> |

| <b>Publications in Indexed / Peer Reviewed Journals</b> |      |  |   |       |                             |  |                 |
|---|------|--|---|-------|-----------------------------|--|-----------------|
| Sl. No.   | Year | Title  | Journal   | Vol.  | Page No.                    | Authors  | * Impact Factor |
| 1   | 2018 | Vertically aligned graphene based non-cryogenic bolometer  | Submitted to ACS Applied Materials and interfaces | --    | --                          | <u>Anil K. Yadav</u> , A. Kundu, R. Rani, N. Sion, James McLauhlin and Devi S. Misra and Kiran S. Hazra                      | Communicated    |
| 2   | 2017 | Antibacterial activity, thermal stability and ab-initio study of copolymer containing sulfobetaine and carboxybetaine groups             | Materials Research Express                        | 4(10) | 105340                      | Nazia Tarannum, Meenakshi Singh and <u>Anil Kumar Yadav</u>  | 1.068           |
| 3   | 2017 | Emergence of a weak topological insulator from the BixSe <sub>3</sub> family and the observation of weak anti-localization               | Applied Physics Letters                           | 110   | 162102-5<br>ISSN: 0003-6951 | K. Majhi, K. Pal, H. Lohani, A. Banerjee, P. Mishra, <u>Anil K Yadav</u> , R. Ganesan, BR Sekhar, U. V Waghmare, PS A. Kumar | 3.142           |
| 4   | 2016 | Pulsed laser deposition of highly oriented stoichiometric thin films of topological insulator Sb <sub>2</sub> Te <sub>3</sub>            | Journal of Vacuum Science & Technology B          | 34    | 021806-6<br>ISSN: 1071-1023 | B. Saha, P. Chaturvedi, <u>Anil K. Yadav</u> , D. Saha and Swaroop Ganguly   | 1.398           |
| 5   | 2015 | Growth and angular dependent resistivity of Nb <sub>2</sub> Pd <sub>0.73</sub> S <sub>5.7</sub> in superconducting single crystal fibers | Materials Chemistry and Physics                   | 164   | 46-50<br>ISSN:0254-0584     | <u>Anil K. Yadav</u> , Himanshu Sharma, Ajay D. Thakur, C. V. Tomy   | 2.129           |
| 6   | 2015 | Improvement of superconducting properties in Fe <sub>1+x</sub> Se <sub>0.5</sub> Te <sub>0.5</sub> superconductor by Cr-substitution     | Solid State Communications                        | 206   | 26-30<br>ISSN: 0038-1098    | <u>Anil K. Yadav</u> , Anup V. Sanchela, Ajay D. Thakur, C. V. Tomy  | 1.458           |
| 7   | 2015 | Effect of nominal substitution of transition   | Solid State Communication                         | 202   | 8-13<br>ISSN:               | <u>Anil K. Yadav</u> , Anup V. Sanchela Ajay D. Thakur,  | 1.458           |

|    |      |  |                               |     |                             |   |       |
|----|------|--|-------------------------------|-----|-----------------------------|---|-------|
|    |      | metals for excess Fe in Fe <sub>1+x</sub> Se superconductor  | tions                         |     | 0038-1098                   | C. V. Tomy  |       |
| 8  | 2014 | Electrical Transport properties of polycrystalline CVD grapheme on SiO <sub>2</sub> /Si Substrate  | Diamond and Related Materials | 45  | 28-33<br>ISSN: 0925-9635    | Anita Kumari, Neetu Prasad, P.K. Bhatnagar, P.C. Mathur, <b>Anil K. Yadav</b> , C.V. Tomy, C.S. Bhatia                | 2.125 |
| 9  | 2013 | Growth, Characterization, Vortex pinning and Vortex Flow of Single Crystals of Iron Chalcogenide FeCr <sub>0.02</sub> Se                                   | Physical Review B             | 87  | 174524-9<br>ISSN: 2469-9969 | <b>Anil K. Yadav</b> , Ajay D. Thakur, C. V. Tomy   | 3.772 |
| 10 | 2011 | Magnetization hysteresis and time decay measurements in FeSe <sub>0.5</sub> Te <sub>0.5</sub> : Evidence for fluctuation in mean free path induced pinning | Physical Review B             | 84  | 214526-8<br>ISSN: 2469-9969 | P. Das, Ajay D. Thakur, <b>Anil K. Yadav</b> , C. V. Tomy, M. R. Lees, G. Balakrishnan, S. Ramakrishnan, A. K. Grover | 3.718 |
| 11 | 2011 | Enhanced superconducting properties in FeCr <sub>x</sub> Se  | Solid State Communications    | 151 | 557-560<br>ISSN: 0038-1098  | <b>Anil K. Yadav</b> , Ajay D. Thakur, C. V. Tomy   | 1.698 |

| <b>Publication in Conference Proceeding</b> |      |  |  |  |                   |                              |  |
|---|------|--|--|--|-------------------|------------------------------|--|
| Sl. No.                                     | Year | Theme of Conference                                      | Venue  | Title of Publication   | ISBN              | Vol./ Page No.               | Authors  |
| 1   | 2018 | Solid State Physics Symposium                            | Hishar Haryana                                     | Thermoelectric response: fluctuation in Fermi temperature by stoichiometry variation in FeSe <sub>1-x</sub> Te <sub>x</sub> superconductor | -                 | -                            | Anil K. Yadav, Veg Singh Bhatt, Sandeep Yadav and C. V. Tomy   |
| 2   | 2017 | Solid State Physics Symposium                            | KNIT Bhuneshwar                                    | ARPES study on Bi <sub>2</sub> Se <sub>3</sub> and BiSbTe <sub>1.25</sub> Se <sub>1.75</sub>   | 978-0-7354-1378-8 | AIP Con. Pro. 1832/09 0019-3 | H. Lohani, P. Mishra, K. Majhi, A. Banerjee, <b>A. K. Yadav</b> , R. Ganesan, P. S. Anil Kumar, and B. R. Sekhar                           |
| 3   | 2016 | Solid State Physics Symposium                            | Amity University, Noida                            | Growth of high quality single crystals of Bi <sub>2</sub> Se <sub>3</sub> topological insulator via solid state reaction method            | 978-0-7354-1378-8 | AIP Con. Pro. 1731/100012-1  | <b>Anil K. Yadav</b> , Kunjalata Majhi, Abhishek Banerjee, Poonam Devi, R.Ganesan, P. Mishra, H. Lohani, B. R. Sekhar and P. S. Anil Kumar |
| 4   | 2015 | Solid State Physics Symposium                            | VIT, Bellure, Tamilnadu India                      | Anisotropic Superconducting Properties of FeSe <sub>0.5</sub> Te <sub>0.5</sub> Single crystals  | 0094-243X         | AIP Con. Pro. 1665/13 0023-3 | <b>Anil K. Yadav</b> , Varun K. Kushwaha, C. V. Tomy   |
| 5   | 2013 | Spintronics Materials: Nanostructures and Devices (SMND) | Kongo Engineering College, Erode, Tamilnadu, India | Effect of off-stoichiometry at the Fe-site in FeSe <sub>0.5</sub> Te <sub>0.5</sub> superconductor   | 1875-3892         | Physics Procedia 49/109-117  | <b>Anil K. Yadav</b> , Ajay D. Thakur, C. V. Tomy  |

|    |      |                               |   |   |                   |                             |   |
|----|------|-------------------------------|---|---|-------------------|-----------------------------|---|
| 6  | 2013 | Solid State Physics Symposium | IIT Bombay, Mumbai                            | Vortex Pinning Mechanism in Single Crystal of Iron Arsenide Superconductor SrFe <sub>1.7</sub> Co <sub>0.3</sub> As <sub>2</sub>                        | 0094-234X         | AIP Con. Pro. 1512/11 74-2  | Ajay D. Thakur, <b>Anil K. Yadav</b> , A. Thamizhavel, C. V. Tomy, S. Ramakrishnan and A. K. Grover |
| 7  | 2013 | Solid State Physics Symposium | IIT Bombay, Mumbai                            | Single Crystals of Iron Chalcogenide Superconductor FeCr <sub>0.02</sub> Se: Growth, Characterization and Vortex Pinning Properties                     | 0094-234X         | AIP Con. Pro. 1512/11 58-2  | <b>Anil K. Yadav</b> , Ajay D. Thakur, C. V. Tomy   |
| 8  | 2012 | Solid State Physics Symposium | SRM University Chennai                        | Pinning Mechanism in Iron Chalcogenide Superconductor FeSe <sub>0.5</sub> Te <sub>0.5</sub>   | 0094-234X         | AIP Con. Pro. 1447/89 7-898 | Ajay D. Thakur, <b>Anil K. Yadav</b> and C. V. Tomy   |
| 9  | 2012 | Solid State Physics Symposium | SRM University Chennai                        | Role of excess Cr at Fe site in FeCr <sub>x</sub> Se and FeCrSe <sub>0.5</sub> Te <sub>0.5</sub>  | 0094-234X         | AIP Con. Pro. 1447/90 2-903 | <b>Anil K. Yadav</b> , Ajay D. Thakur, C. V. Tomy   |
| 10 | 2009 | Solid State Physics Symposium | MS University Baroda, Vadodara Gujarat, India | Observation of the Fishtail Effect and magnetic relaxation measurements in a Single Crystal of the superconductor FeSe <sub>0.5</sub> Te <sub>0.5</sub> | 978-81-8372-054-0 | SSPS Con. Pro. 54/819-820   | <b>Anil K. Yadav</b> , C.V. Tomy, G. Balakrishnan, S. Ramakrishnan and A.K. Grover                  |

**\* Symposium / Seminar / Conference / Workshop (Presentation)**

| Sl. No. | Theme of Conference   | Co-author  | National/International | Venue  | Time/Duration        | Title  |
|---------|---|--|------------------------|--|----------------------|--|
| 1       | International Conference on Nanotechnology :Ideas, Innovations and Initiatives (ICN:3I) | <b>Anil K. Yadav</b> , Ajay D. Thakur, C. V. Tomy  | International          | Department of Mechanical and Industrial Engineering, IIT Roorkee | December 6-8, 2017   | Growth, characterization and vortex state study of single crystals FeCr <sub>0.02</sub> Se of the iron chalcogenide superconductor |
| 2       | International Conference on Emerging Materials and Applications (ICEMA-2017)            | <b>Anil K. Yadav</b> and PS Anil Kumar   | International          | University of Allahabad, Allahabad                               | February 20-22, 2017 | Observation of weak topological insulator from new phase of Bi <sub>2</sub> Se <sub>3</sub> family                                 |
| 3       | 60 <sup>th</sup> DAE, Solid State Physics Symposium                                     | <b>Anil K. Yadav</b> , Kunjalata Majhi, Abhishek Banerjee, Poonam Devi, R.Ganesan, P. Mishra, H. Lohani, B. R. Sekhar and P. S. Anil Kumar | National               | Amity University, Noida  | December 21-25 2015  | Growth of high quality single crystals of Bi <sub>2</sub> Se <sub>3</sub> topological insulator via solid state reaction method    |

|    |  |   |               |   |                               |   |
|----|--|---|---------------|---|-------------------------------|---|
| 4  | 59 <sup>th</sup> DAE, Solid State Physics Symposium  | <u>Anil K. Yadav</u> ,<br>Varun K.<br>Kushwaha and C. V. Tomy   | National      | VIT, Bellure,<br>Tamilnadu India                            | December<br>16-20 2014        | Anisotropic<br>Superconducting<br>Properties of<br>FeSe <sub>0.5</sub> Te <sub>0.5</sub> Single<br>crystals   |
| 5  | International<br>Conference on<br>Strongly<br>Correlated<br>Electron<br>Systems (SCES-<br>2013)    | <u>Anil K. Yadav</u> ,<br>Ajay D. Thakur<br>and C. V. Tomy  | International | University of<br>Tokyo, Tokyo<br>Japan                      | August 5-9,<br>2013           | Thermal Transport<br>Properties of<br>Fe(TM) <sub>x</sub> Se<br>superconductors   |
| 6  | 57 <sup>th</sup> DAE, Solid<br>State Physics<br>Symposium  | <u>Anil K. Yadav</u> ,<br>Ajay D. Thakur<br>and C. V. Tomy  | National      | IIT Bombay,<br>Mumbai India                                 | December 3-<br>7, 2012        | Single Crystals of<br>Iron Chalcogenide<br>Superconductor<br>FeCr <sub>0.02</sub> Se:<br>Growth,<br>Characterization and<br>Vortex Pinning<br>Properties                  |
| 7  | Material and<br>Mechanism of<br>Superconductivity<br>Conference<br>(M2S)                           | <u>Anil K. Yadav</u> ,<br>Ajay D. Thakur<br>and C. V. Tomy  | International | Omni Shoreham<br>Hotel, Washington<br>D.C USA               | July 29-<br>August 3,<br>2012 | Thermodynamic<br>Properties of<br>Superconducting<br>FeCr <sub>x</sub> Se Single<br>Crystal   |
| 8  | 3 <sup>rd</sup> National<br>Conference on<br>Condensed<br>Matter and<br>Material Physics<br>(CMMP) | <u>Anil K. Yadav</u> ,<br>Ajay D. Thakur<br>and C. V. Tomy  | National      | Sardar Patel<br>University, Anand<br>Gujarat                | March 3-5,<br>2012            | Doping effect of<br>transition and rare<br>earth metals in<br>superconducting<br>FeSe at the excess<br>Fe site  |
| 9  | Interanational<br>Conference on<br>Advance<br>Material and its<br>Applications<br>(ICAMA-2011)     | <u>Anil K. Yadav</u> ,<br>Ajay D. Thakur<br>and C. V. Tomy  | International | Kalasalingam<br>University, Tamil<br>nadu                   | March 4-5,<br>2011            | Improvement in<br>superconducting<br>properties by Cr<br>substitution in Fe <sub>1-<br/>y</sub> Cr <sub>y</sub> Se <sub>0.5</sub> Te <sub>0.5</sub> (y =<br>0.01, 0.02)   |
| 10 | Spintronics<br>Materials:<br>Nanostructures<br>and Devices<br>(SMND)                               | <u>Anil K. Yadav</u> ,<br>Ajay D. Thakur,<br>C. V. Tomy   | National      | Kongo<br>Engineering<br>College, Erode,<br>Tamilnadu, India | March 3-4,<br>2011            | Effect of off-<br>stoichiometry at the<br>Fe-site in<br>FeSe <sub>0.5</sub> Te <sub>0.5</sub><br>superconductor   |
| 11 | International<br>Conference on<br>Magnetic<br>Materials<br>(ICMM-2010)                             | <u>Anil K. Yadav</u> ,<br>Ravi Prakash,<br>C.V.Tomy   | International | SINP, Kolkata,<br>India                                     | October 25-<br>29,<br>2010    | Off stoichiometry<br>superconducting<br>properties of single<br>crystal of<br>Fe <sub>1+y</sub> Se <sub>0.5</sub> Te <sub>0.5</sub><br>system                             |
| 12 | 54 <sup>th</sup> DAE, Solid<br>State Physics<br>Symposium  | Pradip Das, <u>Anil<br/>K. Yadav</u> ,<br>C.V.Tomy, G.<br>Balakrishnan, S.<br>Ramkrishnan,<br>A.K. Grover | National      | MS University<br>Baroda, Vadodara<br>Gujarat, India         | December<br>14-18, 2009       | Observation of the<br>Fishtail Effect and<br>magnetic relaxation<br>measurements in a<br>Single Crystal of the<br>superconductor<br>FeSe <sub>0.5</sub> Te <sub>0.5</sub> |

**\* Symposium / Seminar / Conference / Workshop / Summer School/Orientation Course/ Refresher Course Attended**

| Sl. No. | Theme  | Venue       | Duration/Time      | National/International |
|---------|--|-------------|--------------------|------------------------|
| 1       | Workshop on Cryogenic Facility Management            | TIFR Mumbai | 7-11 January, 2014 | National               |
| 2       | Pulse Laser Deposition: Thin films and Nanostructure | IIT Madras  | December 2-4, 2009 | National               |
| 3       | Workshop on Photonics                                | IIT Bombay  | 26-30 August, 2008 | National               |

**\* Symposium / Seminar / Conference / Workshop / Summer School Orientation Course /Refresher Course Organized**

| Sl. No. | Theme                           | Venue                                | Duration/Time                     | National/International |
|---------|---------------------------------|--------------------------------------|-----------------------------------|------------------------|
| 1       | Summer Faculty Research Program | Indian Institute of Technology Delhi | 45 days<br>1 June to 15 July 2016 | National               |
| 2       | Orientation Course              | Allahabad University                 | 24 October 2017 to 20 Nov 2017    | National               |

**Professional Association**

| Sl. No. | Name of Association/Society | Type of Membership |
|---------|-----------------------------|--------------------|
| 1       | -----                       |                    |

**Projects (Major / Minor)**

| Title/ Subject of Research Project | Major / Minor | Period    | Total Grant/Funds Received(Rs.) | Name of Sponsoring/Funding Agency | Outcome of the Project | Co-PI |
|------------------------------------|---------------|-----------|---------------------------------|-----------------------------------|------------------------|-------|
| FIST Level-1                       | Major         | 2015      | 190.0 Lakhs                     | DST GoI                           | On Progress            | -     |
| UGC startup                        | Major         | 2017-2019 | 6.0 Lakhs                       | UGC                               | On Progress            |       |

**Honors / Awards/Fellowship**

| Sl. No. | Year                      | Other Details   |
|---------|---------------------------|---|
| 1       | Sep 2014 March 2015       | UGC-Dr. D.S. Kothari Fellowship for Post Doc at IISc Bangalore            |
| 2       | Feb to July 2014          | RA Fellowship from IRCC IIT Bombay  |
| 3       | August 2013               | IIT Bombay travel grant support to attend the conference at Tokiyo, Japan |
| 4       | August 2012               | DST travel grant award for attending conference at Washington, USA        |
| 5       | June 2010- July 2013      | CSIR-SRF Fellowship to continue PhD                                       |
| 6       | July 2008- June 2010      | CSIR-JRF Fellowship to pursue PhD   |
| 7       | September 2006- June 2008 | DST Fellowship to work as JRF at SAC, ISRO Ahmedabad                      |

**Any Other Relevant Information**

**Foreign Visit:**

1. Attended and presented poster at International conference 'Material and Mechanism of superconductivity' (M2S) at Washington DC USA (2012).
2. Attended and presented poster at International conference SCES-2013 at University of Tokyo Japan (2013).

**Experimental Skills:**

- Work experience in Growth of metallic as well as oxide crystals (Poly as well as single crystals)
- Self handling of sample sealing facility for metallic samples
- Expertise in making contact in microscopic sample
- Working experience in **XRD measurement and analysis** (X'pert PRO PANalytical)

- Working experience in magnetization measurement set-up (**VSM & SVSM – PPMS - Quantum Design USA**)
- Working experience in **Heat Capacity /Torque Magnetometer/Electrical Transport measurements and analysis** at PPMS - Quantum Design USA.
- Hands on expert for **AC susceptibility** measurement set up (SVSM, PPMS-XL)
- Working experience for **Thermal Transport Measurement** (Thermal conductivity and Seebeck measurement) in PPMS – QD set up
- Experience on TEM and SEM operation and characterization
- Thin film growth from **Pulse laser deposition** (PLD)
- Establish dielectric constant measurement set up to measure at low temperature in PPMS using WANE KER and **LabView software**.

### **Computational Skills:**

- **Operating systems:** Windows, Linux
- **Software packages:** LabView, MatLab, Full Prof Suite, Fortran 77/ 90, Wave Metrics Igor, Origin, Powder Cell, MS Office, Lyx , Open Office, and several other calculation, visualization and utility software.
- **Programming Language:** Fortran 77/90, C++