


Dr. Shyamal Mondal

 <i>Photo</i>	Name	Shyamal Mondal
	Designation	Assistant Professor
	DOB	04.01.1983
	Highest Qualification	PhD
	Total Citations	110
	h-index	5
	i-index	3
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Dr. Shyamal Mondal received his Ph. D. from the Indian Institute of Technology Kharagpur, West Bengal, India in Optics and Laser Technology. He is currently an Assistant Professor in Department of Applied Physics, Defence Institute of Advanced Technology (DIAT). His research interests are Ultrafast Lasers, Nonlinear Optical Processes, Terahertz Photonics, Pump-probe Spectroscopy and THz Imaging.

Education

Year	Degrees
2015	Ph. D. in Optics and Laser Technology
2009	M. Tech. in VLSI Design and Microelectronics Technology
2006	B. Tech. in Electronics and Communication Engineering

Professional Experience (Institution, Position and Period)	
1	<i>*Assistant Professor, DIAT, (Dec, 2021 - till now)</i>
2	Research Assistant Professor, SRMIST, Kattankulathur, (Jan, 2019 – Dec, 2021)
3	Rutherford International Postdoctoral Fellow, STFC Daresbury Laboratory, Warrington, United Kingdom, (June, 2017 – Jan, 2019)
4	Postdoctoral Fellow, Czech Academy of Sciences, Institute of Photonics and Electronics, Prague, Czech Republic, (Feb, 2016 – May, 2017)
5	Research Associate, Department of Civil Engineering, IIT Kharagpur, (Sept, 2015 - Jan, 2016)

Research Domains
• Terahertz Imaging
• Time-resolved spectroscopy using optical and THz radiation
• Generation and detection of coherent Terahertz radiation
• 2D materials for modelocking of Ultrafast Lasers
• Optical fiber sensors
• Ultrafast Fiber Lasers and amplifiers
• Cascaded optical nonlinearity management
• Nonlinear optical frequency mixing process
• Picosecond and nanosecond solid-state lasers
• High-power polarization controlled quasi-CW kW Lasers

Specific Projects

<ul style="list-style-type: none"> Received <i>UGC-FRPS Start-Up Grant</i> recommended by the 96th EC Meeting committee; project title: <i>Realization of 2D-Nanomaterial Based Saturable Absorber for Modelocking of Ultrafast Lasers</i>
<ul style="list-style-type: none"> Awarded Grant from <i>SIIC 2020</i> for the final year UG project; project title: <i>Fabrication of 2D Material based Saturable Absorber for Ultrafast Fiber Lasers</i>

Research Collaborations
<ul style="list-style-type: none"> Prof. Prasanta Kumar Datta, IIT Kharagpur Prof. Deepa Venkatesh, IIT Madras Dr. Krishnakanta Mondal, Central University of Punjab Dr. Shouvik Mukherjee, University of Pittsburgh, USA Dr. Jitendra Prajapati, Shivnadar University, Dadri, Uttar Pradesh Prof. T Rama Rao, SRMIST, Kattankulathur, Tamil Nadu Dr. Sachin Kumar, SRMIST, Kattankulathur, Tamil Nadu

Ph.D Thesis Supervision							
S.N.	Title of PhD Thesis	Name of the scholar	Affiliation	Name of Guide	Name of Co-guide (s)	Date of submission	Submitted / Awarded
1.	Analysis of Parameters for Inter-combed Photoconductive Antenna	Nisha Boby E	SRMIST, Kattankulathur, India	Dr. Sachin Kumar	Dr. Shyamal Mondal	Continue - 2022	Ongoing
2.	Design of Low Loss Asymmetrical Photonic Crystal Fiber for Terahertz Communication	A. Alice Linse	SRMIST, Kattankulathur, India	Dr. Sachin Kumar	Dr. Shyamal Mondal	Continue - 2022	Ongoing
3.	Design and Analysis of Terahertz Filters	Harlan L	SRMIST, Kattankulathur, India	Dr. Sachin Kumar	Dr. Shyamal Mondal	Continue - 2023	Ongoing
4.	Numerical Modelling of Photoconductive Antenna for Terahertz Applications	Vaishshale Rathinam	SRMIST, Kattankulathur, India	Dr. Rama Rao T.	Dr. Shyamal Mondal		Thesis Submitted

Current Membership in professional organizations

Sl. No	Membership details
1.	Life-member of Indian Laser Association (ILA) (Membership No. 963)
2.	Life Member of Optical Society of India (OSI), Membership Number L-936
3.	Member of Optical Society of America (OSA) since 2012, Young Researcher Member, Membership Number 1032435
4.	Member in Indian Science Congress Association (ISCA), 2019

Honors and awards: -

Sl. No	Nature of honour/award
1.	Awarded Rutherford International Postdoctoral Fellowship 2017 (Marie Skodowska-Curie CO-FUND scheme) for two years.

2.	Awarded Postdoctoral Fellowship-2016 of Czech Academy of Sciences for two years.
3.	Awarded Optical Society of America Student Travel Grant for FiO/LS-2015 conference held at San Fransisco, USA, in October, 2015.
4.	Awarded IIT Kharagpur Travel Grant for ASSL-2014 conference held at Shanghai, China in November, 2014.
5.	Awarded DAE-BRNS best poster award at Theme meeting on Ultrafast Science, 2013.
6.	Awarded DST Travel Grant for CLEO-PR 2013 conference held at Kyoto, Japan in June, 2013.
7.	Awarded CSIR Senior Research Fellowship in April, 2012 for three years.
8.	Elected as President of IITKGP OSA Student Chapter from March,2013 to April, 2015.
9.	Qualified Graduate Aptitude Test in Engineering (GATE)-2005 with Percentile: 91.01, Score: 371.

Other Achievements:

- Organized 6 Days FDP Programme on ‘Recent Advancements in Organic & Nano Electronics-RAONE-21’, from 8th – 13th October 2021 as a Coordinator at SRMIST and given a talk on ‘2 μ m Ultrafast Fiber Laser and Its Applications’
- Organized One Week Faculty Development Programme on *Smart Sensors and their Applications* (SSAP-2021) from 4th to 8th January, 2021 as a **Coordinator** at SRM IST.
- Organized International Conference on *Electronics, Photonics and Smart Technologies* (ICePhaST-2020) from 16th - 18th November 2020 at SRM IST as a **Coordinator**.
- Organized 5 Day FDP on Flexible and RF Printed Electronics from 09th - 13th October 2019 at SRM IST-Chennai as a **Coordinator**.
- B. Tech. final year Project Review Panel member in SRM IST, Chennai.
- University Ph. D. course work and B. Tech. Exam **question paper setter** and **Exam coordinator** at SRM IST.
- Organized *IONS-2014* (as **Convenor**) and *Photonics -2014* (as a student organizer) at IIT Kharagpur.
- Worked at **Indian Center for Space Physics**, Garia, Kolkata as a *Hardware Engineer* from January, 2007 to July, 2008 in Chandrayaan I (RT-2 payload) project.
- Worked at **B. P. Podder Institute of Management & Technology**, Kolkata as a *Lecturer, Department of ECE*, for six months (July, 2009 to December, 2009).

List of Publications:

Journals:

1. Vaishshale Rathinasamy, E. Nisha Flora Bobby, T. Rama Rao, and **Shyamal Mondal***, “Numerical Investigation and Circuit Analysis of Interdigitated Photoconductive Antenna for Terahertz Applications”, *Optical and Quantum Electronics - Springer*, (2022) (Accepted).
2. E. Nisha Flora Bobby, Jitendra Prajapati, Vaishshale Rathinasamy, Shouvik Mukherjee, and **Shyamal Mondal***, “Parametric Investigation of Interdigitated Photoconductive Antenna for Efficient Terahertz Applications”, *Journal of Arabian Science and Engineering - Springer*, (2022).
3. E. Nisha Flora Bobby, Jitendra Prajapati, Vaishshale Rathinasamy, T. Rama Rao, and **Shyamal Mondal***, “6G and beyond: Investigation of broadband Terahertz Interdigitated Photoconductive antenna by exploiting Laser parameters”, *Microwave and Optical Technology Letters – Wiley*, (2021).
4. S. Jena, D. K. Mishra, **Shyamal Mondal**, Sujay Chakravarty, Shamima Hussain and P. Mallick, "Effect of size, phase fraction and interface coupling on the magnetic behavior of Al modified α -Fe₂O₃/NiFe₂O₄ core-shell structure", *Journal of Applied Physics A - Springer*, (2021).
5. **Shyamal Mondal***, Rounak Ganguly, and, Krishnakanta Mondal, “Topological Insulators: An in-depth Review of their Use in Modelocked Fiber Lasers”, *Annalen der Physik*, (2021), 2000564.

6. Vaishshale Rathinasamy, Rama Rao Thipparaju, Nisha Flora Bobby Edwin and **Shyamal Mondal***, "Interdigitated photoconductive terahertz antenna for future wireless communications", *Microwave and Optical Technology Letters* – Wiley – 2021.
7. Mitra, Nilanjan, Alak K. Patra, Satya P. Singh, **Shyamal Mondal**, Prasanta K. Datta, and Shailendra K. Varshney. "Interfacial delamination in glass-fiber/polymer-foam-core sandwich composites using singlemode-multimode-singlemode optical fiber sensors: Identification based on experimental investigation." *Journal of Sandwich Structures & Materials* 22, no. 1 (2020), 40-54.
8. Mitra, Nilanjan, AlakKumar Patra, **Shyamal Mondal**, and Prasanta Kumar Datta. "Interfacial delamination crack profile estimation in polymer foam-cored sandwich composites." *Engineering Structures* 189 (2019), 635-643.
9. **S. Mondal**, S. Mukherjee, S. P. Singh, S. C. Rand, S. Bhattacharya, Amit C. Das and P. K. Datta, "Dynamic gain aperture modelocking in picosecond regime based on cascaded second-order nonlinearity," *Optics Express* 24(14) (2016), 15274–88.
10. S. Bhattacharya, R. Maiti, A. Das, S. Saha, **S. Mondal**, S. Ray, S. Bhaktha B.N., and P. Datta, "Efficient control of ultrafast optical nonlinearity of reduced graphene oxide by infrared reduction," *J. Appl. Phys.* 120, (2016), 013101.
11. **S. Mondal**, S. P. Singh, S. Mukherjee, S. Mukhopadhyay, and P. K. Datta, "Widely tunable intracavity phase-matched cascaded second-order interaction for generation of multi-color radiation," *IEEE J. Quant. Electron.* 51, (2015), 1–5.
12. A. Choubey, **S. Mondal**, R. Singh, B. Upadhyaya, P. Datta, and S. Oak, "Generation of 415 W of p-polarized output power in long pulse operation of Nd:YAG laser using z-fold resonator geometry," *Opt. Laser Technol.* 60, (2014), 41–48.
13. A. Choubey, **S. Mondal**, R. Singh, B. Upadhyaya, P. Datta, and S. Oak, "Enhancement of p-polarized output power in long pulse single rod Nd:YAG laser using a tilted 90° quartz rotator," *Opt. Commun.*, 330, (2014), 61–70.
14. S. Mukhopadhyay, **S. Mondal**, S. P. Singh, A. Date, K. Hussain, and P. K. Datta, "Dual colour cw modelocking through soft aperture based on second order cascaded nonlinearity," *Optics Express*, 21, (2013), 454–462.
15. **S. Mondal**, S. Singh, K. Hussain, A. Choubey, B. Upadhyay, and P. Datta, "Efficient depolarization-loss compensation of solid-state lasers using only a Glan-Taylor Polarizer," *Opt. Laser Technol.* 45, (2013), 154–159.
16. **S. Mondal**, S. P. Singh, S. Mukhopadhyay, A. Date, K. Hussain, S. Mukherjee, and P. K. Datta, "A comparative study on dual colour soft aperture cascaded second-order mode-locking with different nonlinear optical crystals," *Pramana* 82, (2014), 313–319.
17. S. P. Singh, **S. Mondal**, K. Hussain, and P. K. Datta, "Development of optical parametric oscillator tunable in the range 970-1460 nm," *Def. Sci. J.* 61, (2011), 377–382.

International Conference:

1. Pallavi Mahankali, Susila M, **Shyamal Mondal**, T. Rama Rao, "Design and Performance Analysis of Dielectric Stripe based Terahertz Waveguide", In 2021 IEEE 4th International Conference on Communication, Information and Computing Technology, (ICCICT), pp. 1-4. IEEE, 2021.
2. E. Nisha Flora Bobby, Vaishshale Rathinasamy, T. Rama Rao, and **Shyamal Mondal***. "Parametric Analysis of Inter-combed Photoconductive Antenna for Terahertz Communication." In 2021 IEEE 4th International Conference on Communication, Information and Computing Technology, (ICCICT) pp. 1-4. IEEE, 2021.
3. **Mondal, Shyamal***, Vaishshale Rathinasamy, Shriya Kapoor, Shouvik Mukherjee, and T. Rama Rao. "Interdigitated Photoconductive Antenna Design and Analysis for Terahertz Wireless Applications." In 2020 IEEE 3rd 5G World Forum (5GWF), pp. 484-487. IEEE, 2020.
4. Rathinasamy, Vaishshale, Shriya Kapoor, Akhil Rout, T. Rama Rao, and **Shyamal Mondal***. "Interdigitated-Slot Photoconductive Antenna for Terahertz Applications." In 2019 IEEE Indian Conference on Antennas and Propagation (InCAP), pp. 1-3. IEEE, 2019.
5. Honzátko, Pavel, Yauhen Baravets, **Shyamal Mondal**, Pavel Peterka, and Filip Todorov. "Coherent sources for mid-infrared laser spectroscopy." In 20th Slovak-Czech-Polish Optical Conference on Wave

- and Quantum Aspects of Contemporary Optics, vol. 10142, p. 1014202. International Society for Optics and Photonics, 2016.
6. Das, Amit C., S. Bhattacharya, K. C. Mandal, **S. Mondal**, M. Jewariya, T. Ozaki, S. N. B. Bhaktha, and P. K. Datta. "Dielectric response of pure and doped-GaSe crystals studied by an indigenously developed broadband THz-TDS system." In *Nonlinear Optics and its Applications IV*, vol. 9894, p. 98941E. International Society for Optics and Photonics, 2016.
 7. Bhattacharya, S., R. Maiti, S. Saha, A. C. Das, **S. Mondal**, S. K. Ray, S. B. N. Bhaktha, and P. K. Datta. "Infrared reduction, an efficient method to control the non-linear optical property of graphene oxide in femtosecond regime." In *Nanophotonics VI*, vol. 9884, p. 98842L. International Society for Optics and Photonics, 2016.
 8. **Mondal, Shyamal**, Shouvik Mukherjee, Satya Pratap Singh, and Prasanta Kumar Datta. "Realization of Inverse Saturable Absorption by Cascaded Second-Order Process for Stable Modelocking." In *Laser Science*, pp. LTh4D-7. Optical Society of America, 2015.
 9. **Mondal, Shyamal**, Satya Pratap Singh, Shouvik Mukherjee, Sourabh Mukhopadhyay, and Prasanta Kumar Datta. "Intracavity cascaded second order interaction in BBO for generation of efficient, widely tunable coherent radiation." In *Advanced Solid-State Lasers*, pp. AM5A-46. Optical Society of America, 2014.
 10. Hussain, Kamal, Satyapratap Singh, **Shyamal Mondal**, Lokanath Mishra, and Prasanta Kumar Datta. "Wavelength Conversion Using Semiconductor Optical Amplifier and Bandpass Filter Combination." In *International Conference on Fibre Optics and Photonics*, pp. T3A-59. Optical Society of America, 2014.
 11. Singh, S. P., **S. Mondal**, S. Mukherjee, A. Date, S. Mukhopadhyay, and P. K. Datta. "Multi-colour OPO based on second order cascaded nonlinear interaction." In *Conference on Lasers and Electro-Optics/Pacific Rim*, p. WPB-12. Optical Society of America, 2013.
 12. Singh, S. P., **S. Mondal**, A. Date, S. Mukhopadhyay, and P. K. Datta. "Dual colour cw mode-locking through soft-aperture and second order cascaded nonlinearity." In *International Conference on Fibre Optics and Photonics*, pp. W3C-2. Optical Society of America, 2012.
 13. **S. Mondal**, S. P. Singh, S. Mukherjee, A. Date, P. K. Datta, and S. Mukhopadhyay. "Investigation on stability of cascaded second order mode-locking." In *Workshop on Recent Advances in Photonics (WRAP)*, pp. 1-2. IEEE, 2013.
 14. **S. Mondal**, S. Datta, S. Dey, S. Bera, S. P. Singh, and P. K. Datta. "Efficient compensation of thermal birefringence of a flash-lamp pumped Nd: YAG laser by a simple but novel method." In *Solid State Lasers XX: Technology and Devices*, vol. 7912, p. 79122F. International Society for Optics and Photonics, 2011.

National Conference:

1. C. Das, S. Bhattacharya, **S. Mondal**, M. Jewariya, S. B. N. Bhaktha and P. K. Datta, "Indigenous development of broadband terahertz time domain spectroscopy system using optical rectification and electrooptic sampling in ZnTe crystal," in *Proceedings of National Laser Symposium, RRCAT, India*, (2015).
2. A. C. Das, R. Maiti, M. Jewariya, S. Bhattacharya, **S. Mondal**, S. K. Ray, S. B. N. Bhaktha and P. K. Datta, "Optical and Electrical Properties of Reduced Graphene Oxide Thin Film in Terahertz Frequency Range," in *Proceedings of National Laser Symposium, RRCAT, India*, (2015).
3. S. Bhattacharya, R. Maiti, A. C. Das, S. Saha, **S. Mondal**, S. K. Ray, S. B. N. Bhaktha and P. K. Datta, "Non-linear optical property of IR induced partially reduced graphene oxide in femtosecond regime," in *Proceedings of Ultrafast Science, S. N. Bose National Centre for Basic Sciences, Kolkata, India*, (DAE-BRNS, 2015).
4. A. C. Das, M. Jewariya, S. Bhattacharya, **S. Mondal**, S. B. N. Bhaktha and P. K. Datta, "Study of Dielectric Response of Cerium Oxide Thin Film by Indigenously Developed THz Time Domain Spectroscopy System," in *Proceedings of Ultrafast Science, S. N. Bose National Centre for Basic Sciences, Kolkata, India*, (DAE-BRNS, 2015).

5. **S. Mondal**, S. Mukherjee, K. Manoranjan, and P. K. Datta, "Investigation on cascaded second-order modelocked laser for stable picosecond optical pulse," in Proceedings of Theme meeting on Ultrafast Science, Manipal University, India, vol. P-04 (2014), p. 50.
6. A. Choubey, **S. Mondal**, R. Singh, B. Upadhyaya, P. Datta, and S. Oak, "Comparison of z-fold and v-fold resonator configurations for generation of high average power p-polarized output in long pulse operation of dual-rod Nd:YAG laser," in Proceedings of National Laser Symposium, BARC, India, vol. CP-01-20 (2014).
7. **S. Mondal**, S. P. Singh, S. Mukherjee, A. C. Das, S. Bhattacharya, S. Mukhopadhyay, and P. K. Datta, "Theoretical and experimental study of tunable OPO based on cascaded second order nonlinearity," in Proceedings of National Laser Symposium, BARC, India, vol. CP-06-58 (2014).
8. A. C. Das, S. Bhattacharya, **S. Mondal**, A. Sil, S. K. Patra, and P. K. Datta, "Investigation of two photon absorption and two photon fluorescence of a terpyridine complex," in Proceedings of National Laser Symposium, Sri Venkateswara University, India, vol. CP-04-53 (2014).
9. **S. Mondal**, S. P. Singh, S. Mukhopadhyay, A. Date, K. Hussain, S. Mukherjee, and P. K. Datta, "A comparative study on dual colour soft aperture cascaded second order mode-locking with different nonlinear optical crystals," in Proceedings of National Laser Symposium, BARC, India, vol. CP-05-06 (2013), p. 61.
10. **S. Mondal**, S. P. Singh, A. Date, S. Mukherjee, S. Mukhopadhyay, and P. K. Datta, "A comparative study on dual colour soft aperture cascaded second order mode-locking with different nonlinear optical crystals," in Proceedings of Theme meeting on Ultrafast Science, IIT Kharagpur, India, vol. 1 (2013), p. 51.
11. A. Bera, A. Acharyya, **S. Mondal**, and P. K. Datta, "Picosecond laser-based z-scan setup with automated control and data acquisition," in Proceedings of Theme meeting on Ultrafast Science, IIT Kharagpur, India, vol. 1 (2013), p. 39.
12. S. P. Singh, **S. Mondal**, P. K. Barman, P. K. Nayak, S. Mukhopadhyay, S. K. Varshney, and P. K. Datta, "Optimization of the performance of nonlinear mirror mode-locking employing different nonlinear optical crystals," in Proceedings of National Laser Symposium, BARC, India, vol. CP-05-08 (2012).
13. R. Singh, A. Choubey, **S. Mondal**, S. Ali, B. N. Upadhyaya, P. K. Datta, and S. M. Oak, "Birefringence compensation in multimode long pulse Nd:YAG laser," in Proceedings of National Laser Symposium, Anna University, India, vol. A-01-031 (2012), p. 43.
14. **S. Mondal**, K. Hussain, S. Singh, A. Choubey, B. Upadhyay, and P. K. Datta, "Thermal birefringence compensation in high power single rod pulsed Nd:YAG laser," in International Conference on Theoretical and Applied Physics, IIT Kharagpur, (2011), p. 137.
15. **S. Mondal**, S. Dey, S. Bera, S. P. Singh, and P. K. Datta, "Efficient compensation of thermal birefringence of a flash-lamp pumped Nd:YAG laser by a tilted glan-taylor polarizer," in Proceedings of National Laser Symposium, RRCAT, India, vol. 1.23 (2010), p. 25.
16. . P. Singh, **S. Mondal**, K. Hussain, and P. K. Datta, "Development of optical parametric oscillator tunable in the S range of 900-1500 nm for spectroscopic application," in Proceedings of National Laser Symposium, RRCAT, India, vol. 4.23 (2010), p. 76.

Book Chapters

1. Mondal, S., Edwin, N. F. B., & Rathinasamy, V. (2022). Interdigitated Photoconductive Antenna for Efficient Terahertz Generation and Detection. In B. You, & J. Lu (Eds.), Terahertz Technology [Working Title]. IntechOpen. <https://doi.org/10.5772/intechopen.102379>
2. Shyamal Mondal, E. Nisha Flora Boby, and Vaishshale Rathinasamy "Role of Terahertz Photoconductive Antenna in Future Healthcare Informatics," accepted for publication as a book chapter in "Advances of 5G Wireless Communication System in Healthcare Informatics", CRC Press, Taylor and Francis, 2021.

Invited Lectures:

1. "Terahertz Technology: The Challenges, Opportunities, and Progress of Wireless Communication beyond 5G & 6G" – Webinar given on 26.07.2021 in IEEE Student Branch of Jeppiaar Engineering College, Chennai.
2. "Role of Fiber Lasers in Optical and Terahertz Sensing" - given at AICTE Training and Learning (ATAL) 5 Days Faculty Development Programme on Smart Sensors and their Applications (SSAP-2021), SRMIST, India

3. “2 μm Ultrafast Fiber Laser and Its Applications” – Webinar given in 6 days FDP on "Recent Advancements in Organic & Nano Electronics-RAONE-21" held between 8th - 13th October 2021 at SRM Institute of science and technology, Chennai.
4. “Interdigitated Photoconductive Antenna Design and Analysis for Terahertz Wireless Applications” – given a lecture in 2020 IEEE 3rd 5G World Forum (5GWF), pp. 484-487 on 10.09.2020.
5. “Review of Generating High Field Terahertz Using Chirped-Pulse Beating in Nonlinear Crystal” – given an invited lecture at Student Development Program on 30.11.2018 at B. P. Poddar Engineering College, Kolkata.

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Google Scholar Link : <https://scholar.google.co.in/citations?user=rXdYxC8AAAAJ&hl=en>