

Curriculum Vitae



Name: Prof. (Dr) Dhruva Kumar Singh,

Designation: Visiting Professor, Fuel, Minerals & Metallurgy Engineering

Department, IIT ISM Dhanbad, Jharkhand 826004

Former Head, Hydrometallurgy & Rare Earths Development Section, Materials Group, Bhabha Atomic Research Centre; Senior Professor, Homi Bhabha National Institute, Mumbai

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1. Date of Birth: January 01, 1965

2. Education Qualification:

Sr. No.	Degree/Diploma	University	Year	Achievement/Subject
1	B.Sc.	LNMU, Darbhanga	1985	First Class (Chemistry)
2	M.Sc.	Magadh University, Bodhgaya	1989	Gold Medallist (Chemistry)
3	Ph.D.	Mumbai University	2001	Chemistry (Process Hydrometallurgy)
4	Post-Doctoral Fellowship	FSU, Tallahassee, Florida, USA	2002-2004	Process Chemistry for Remediation of Radionuclides

3. **Expertise:** Development of scalable process flowsheets for atomic and critical metals (Rare Earths, U, Co, Ni, etc.) from various primary and secondary sources. Processing of rare earth resources and critical minerals.
4. **Field of interest:** (i) Solvent Extraction, (ii) Aqueous solution chemistry, (iii) Membrane-based separation techniques, (iv) Solid-liquid extraction, (v) Pyrometallurgical processing of Rare Earth Metals & Alloys, (vi) Critical minerals & metal, and (vii) Circular economy through e-waste/industry waste recycling

5. Professional Affiliations:

- Life Member, Indian Institute of Metals (IIM), Secretary, IIM Mumbai Chapter
- Life Member, Joint Secretary, Rare Earths Association of India (REAI)
- Life Member, EC member, Association of Separation Scientists and Technologists (ASSET)
- Life Member, EC Member, Indian Society of Analytical Scientists (ISAS)
- Life Member, Society for Materials Chemistry (SMC)
- Life Member, Indian Association of Nuclear Chemists and Allied Scientists (IANCAS)
- Life Member, Indian Nuclear Society
- Life Member, National Association for Applications of Radioisotopes and Radiation in Industry (NAARRI)
- Life Member, Indian Association of Solid-State Chemists and Allied Scientists (ISCAS)
- Life Member, Hindi Vigyan Sahitya Parishad

6. Recognition/Awards/Honours:

- Gold Medal, M.Sc. (Chemistry) (1989)
- INS Medal 2006 for contribution to the development of processes for strategic materials. (2006)
- Metallurgist of the Year Award 2015 by the Ministry of Steel, Govt. of India for Rare Earths Recovery and Production. (2015)
- IIM Hindustan Zinc Gold Medal Award 2019 for contributions in non-ferrous metallurgical industries. (2019)

- DAE Group Achievement Award 2018 for preparation and supply of gadolinium nitrate hexahydrate moderator poison for use in Kakrapara Atomic Power Plant-3. (2018)
- DAE Group Achievement Award 2020 for the development of indigenous technology for the production of Nd metal required for making NdFeB magnets in the country. (2020)
- VASVIK AWARD 2022 for Materials & Metallurgical Science & Technology. (2022)
- Lifetime Achievement Award 2024 by Rare Earth Association of India (REAI) for seminal contributions in the field of rare earths R & D and Lab to Industrial Scale Technology demonstration. (2024)
- Lifetime Achievement Award 2024 by REMAC 2024 for remarkable contributions in the Research and Development around critically important rare earth elements & compounds required for establishing a value supply chain in the country. (2024)
- Lifetime Achievement – Technical Award 2024 by Indian Society of Analytical Scientists (ISAS) for notable contributions in the field of science & technology of critical and rare earth materials. (2024)

7. Leadership/ Teaching/ Guidance/ Technical Advice/Support

- Leading a group of highly motivated, dedicated and diligent scientific professionals for more than 20 years in the field of extractive metallurgy for strategic and critical metals (rare earths and base metals).
- Recognized faculty member of Homi Bhabha National Institute (a deemed University) and guided 6 students to get PhD degrees & 3 M. Tech degrees.
- Reviewer of several International Journals of Repute, expert member for selection/promotion committees.
- Writing project proposals, making DPR and monitoring.
- Task force/council members in several committees of various institutes under the Department of Atomic Energy for monitoring and providing technical support/troubleshooting problems for the departmental projects/plants.
- Providing technical support and expertise to IREL (India) Limited for the timely implementation of processes for the commercial production of rare earth compounds and in the standardization of operating processes in the plant for regular production.

- Member in NITI Aayog constituted committee for achieving circular economy in gypsum (a waste product of fertilizer industry).
- Special invitee as an expert member for providing technical support on the recovery of rare earths from Red Mud (a waste of the aluminium industry) for Cobalt & Nickel from various sources.

8. Brief Description and Achievements:

Dr Dhruva Kumar Singh, a Gold Medallist in M.Sc. Chemistry from Magadh University, Bodh Gaya, joined Bhabha Atomic Research Centre, Mumbai, India, in 1991 after completing the 34th batch of training school. He earned his PhD from Mumbai University in 2001 and conducted post-doctoral research (2002-2004) at Florida State University, USA, with world-renowned nuclear scientist Prof. G.R. Choppin. **After superannuation in December 2024**, Dr Singh joined IIT (ISM) Dhanbad as a Visiting Professor and initiated the course on Critical minerals and rare earths. Dr Singh's impactful contributions have greatly advanced India's self-reliance in critical and rare earth materials. His area of research - atomic, critical and rare earth domains- has put him in the rare category of researchers excelling in both fundamental and technological development. The role of critical and rare earths for the clean energy transition and as a key driver for the country's economic growth is well known. Dr Singh's pioneering work in developing hydrometallurgical processes for extracting high-purity heavy rare earths like dysprosium, yttrium, and terbium from low-grade minerals is a significant achievement. This effort led to India's first production of these critical materials, now adopted by IREL (India) Limited for commercial production, fulfilling strategic national requirements. His innovative process flowsheets have not only facilitated the extraction of rare earths from monazite but also enabled scalable production of high-purity Nd, Nd+Pr, Dy, Y, etc., contributing to India's clean energy goals. Based on the technologies developed under his leadership, IREL has established the Rare Earths & Titanium Theme Park (RETTP) in Bhopal, producing rare earth metals such as La and Ce, with plans to expand production to Nd metal, essential for making NdFeB magnets critical for the clean energy sector. His group's breakthrough in developing a reduction-diffusion process for Sm-Co₅ alloy powder has resulted in setting up a Sm-Co magnet production plant at BARC's Vizag campus, an initiative dedicated to the nation by the Hon'ble Prime Minister of India. Dr Singh's work extends beyond primary resources, with significant contributions to recycling rare earth from NdFeB magnetic scrap and

developing technologies for producing RE phosphors for energy-efficient lighting. His team's work has also led to the transfer of didymium metal (Nd-Pr) technology to private industry, reducing reliance on imports and strengthening India's value chain in rare earths. A key achievement is his hydrometallurgical process for recovering cobalt and nickel from maraging steel scrap, leading to the establishment of a commercial plant by the Heavy Water Board. Dr Singh's expertise has earned him a place on various national committees, including NITI Aayog, where he provides critical input on strategic metals. His work has been recognized with numerous awards, including the INS Gold Medal, Hindustan Zinc Gold Medal, the Metallurgist of the Year Award, Vasvik Award and the Lifetime Achievement Award by the Rare Earths Association of India and Indian Association of Analytical Scientists (ISAS). Dr Singh's contributions have had a transformative impact on the rare earth and critical metal sectors in India. In a strategic move to fortify India's resource security, the NITI Aayog of the Government of India has appointed Prof. Dhruva Kumar Singh as the Chairman of the high-level Committee on Critical Minerals. The committee is mandated to formulate a comprehensive national strategy to accelerate the identification, assessment and development of the critical mineral resources to ensure the country's economic growth and national security.

Significant Contributions of Dr Dhruva Kumar Singh

Dr Dhruva Kumar Singh has made remarkable contributions in the forefront of scientific advancements, excelling in both the separation of elements and the timely implementation of technologies for large-scale production of rare earth elements. His achievements have played a pivotal role in establishing India's self-sufficiency in the realm of rare earth element-based materials. His expertise spans the development of process flowsheets for recovering a wide spectrum of valuable metals, including nuclear, rare earth, and strategically important elements. Notably, his work holds great significance for our nuclear energy program, highlighting the importance of reclaiming such metals. Dr Singh's notable accomplishments encompass specialized solvent extraction (SX) techniques, which have been widely embraced by industries for effectively isolating chemically similar rare earth elements. His efforts have not only yielded successful laboratory-scale processes but have also demonstrated their feasibility on bench scales, generating vital operational data for potential industrial implementation. These developed processes have led

to the high-purity production of rare earths, sourced not only from monazite mineral deposits but also from different types of secondary resources (e-waste, industry waste such as phosphogypsum, coal fly ash, red mud, etc.). Dr Singh's technology transfer to IREL (India) Limited has enabled the commercial production of high-purity (>99.99%) oxides of neodymium, samarium, dysprosium, gadolinium, terbium, and yttrium (Nd_2O_3 , Sm_2O_3 , Dy_2O_3 , Gd_2O_3 , Tb_4O_7 & Y_2O_3). Based on his constant technical support, IREL has improved its productivity to become top performing public sector unit in the middle sector. Furthermore, Dr Singh's technological inputs extend to the recycling of rare earths from magnetic waste—an achievement with profound implications for the upcoming Rare Earths Theme Park in Bhopal. Additionally, his leadership in optimizing process conditions and producing high-purity gadolinium nitrate hexahydrate from its oxide has satisfied stringent specifications for burnable poison application in the reactivity control and shutdown system of NPCIL's PHWR (KAPP-3). An impressive 250 kg of gadolinium nitrate hexahydrate was supplied under the BARC-NPCIL MoU. Dr Singh has also contributed significantly to the establishment of a 3 Tonnes/Year Rare Earth Permanent Magnet Facility at BARC, meeting strategic demands for RE-based permanent magnets in the Department and defense sector. IREL has also set up a Rare Earth & Titanium Theme Park in Bhopal, showcasing scalable technologies and processes developed by Dr Singh and his team to produce RE metals and alloys (La, Ce, Nd, Pr, Nd+Pr, Dy & Pr-Mg, SmCo_5) from indigenous raw materials. These technologies will help in establishing the value supply chain for REEs in the country. His noteworthy contributions also include the development & demonstration of a process to recover Co & Ni from maraging steel scrap (MDN 350) generated at MIDHANI and its transfer to HWB for production of high-purity cobalt and nickel.

Dr Dhruva K Singh's original contributions are evident through numerous invited lectures delivered to national and international audiences. **With around 71 papers published in peer-reviewed journals, two book chapters, and 21 BARC research reports, his work has garnered over 1000 international citations, showcasing an H-index of 19.** The profound impact of Dr Singh's expertise extends beyond BARC, enriching society through collaborations with various industries and institutes.

Noteworthy/ Deployed Technologies for commercialization & adoption by industries

1. Development of a hydrometallurgical process for cobalt purification from beta cake (secondary source) for Hindustan Zinc Limited (HZL), Udaipur.
2. Development of SX process flowsheets employing D2EHPA and EHEHPA as extractants to produce cobalt of high purity (>99%) with >98% recovery from leach liquors of sludges and nodules.
3. Development of a process for yellow cake precipitation by H_2O_2 for process recovery (PR) solution of Uranium Corporation Limited (UCIL), Jaduguda.
4. Development of SX process for >99.9% Gd_2O_3 from the middle fraction of rare earths (MRE) for its application in Pressurised Heavy Water Reactor (PHWR).
5. Development of SX process for recovery of uranium and separation of rare earths from fertilizer-grade phosphoric acid.
6. Development of a solvent extraction process for the purification of high-purity Dy_2O_3 from crude concentrate of heavy rare earths (HRE) fraction for Advanced Heavy Water Reactor (AHWR).
7. Process development for producing >99.9% Y_2O_3 from HRE concentrate for phosphor and nuclear applications.
8. Purification of erbium (Er_2O_3) for its application as a coating material to prevent tritium permeation in the test blanket module (TBM) of the Fusion Reactor.
9. Development of an auxiliary process based on phosphate precipitation route for complete recovery of uranium from Tummalapalle ore (complexed carbonate leach liquor with <1g/L U_3O_8 and a host of impurities).
10. Development of a single-cycle SX process using a neutral extractant DHHA to separate highly pure mixed heavy rare earths and nuclear-grade pure uranium from sodium diuranate (SDU) obtained at Heavy Water Board (HWB).
11. Development of a leaching process for the decalcification of Sm-Co alloy powder suitable for permanent magnet preparation.
12. Development of polyether sulphone (PES) based extractant encapsulated composite beads as an alternative to IX resins for the effective recovery of rare earths.
13. Development and demonstration of a dual cycle SX process to produce high-purity (~99.99%) yttrium oxide from xenotime minerals.

14. Development of process flow-sheet for purification of terbium oxide (Tb_4O_7) from Gd-Tb concentrate for IREL Plant.
15. Development of process technology for the production of high-purity neodymium oxide (Nd_2O_3) from the light fraction of rare earth concentrates produced at the IREL plant.
16. Development of process technology to produce high purity of praseodymium oxide (Pr_6O_{11}) from the light fraction of rare earth concentrates produced at the IREL plant.
17. Production and supply of nuclear pure Gadolinium nitrate hexahydrate for its application as burnable poison for KAPP-3&4 of NPCIL.
18. Development of a hydrometallurgical-based separation process flowsheet for the rare earth (Nd, Pr & Dy) recycling from waste computer hard disk drives.
19. Development of a hydrometallurgy process for Co and Ni recovery from maraging steel scraps (MDN 350 scrap) and cracker catalysts.
20. Design, development and delivery of indigenous technology for the production of high-purity critical rare earth metals (La, Ce, Pr, Nd, Nd+Pr, Dy, Tb) /alloys (Pr-Mg, $SmCo_5$) for strategic and commercial requirements of the country. Technology of rare earth metals such as (Nd and Nd+Pr), required for the production of rare earth permanent magnet NdFeB magnet in the country, using indigenously produced Nd-Pr oxide by IREL (India) Limited.
21. Development process technology for the production of energy-saving light application of Rare Earth phosphors:
 - (a) Eu^{3+} Doped $Y(VPB)O_4$ Lamp Phosphor
 - (b) Ce^{3+} Doped $Y_3Al_5O_{12}$ LED Phosphor
 - (c) Tb^{3+} Doped Gd_2O_2S X-Ray Phosphor and fluorescent Screens

8. Publication List:

International Journal: (77)

1. Novel diisobutyl diamide grafted polymer resin for uranium recovery from mild nitric acid medium, V. Kumari, R. Ruhela, **D. K. Singh**, M. Tiwari, S. K. Sahu, Hydrometallurgy, Volume 237, November 2025, 106552
2. Structure property correlation for interpreting distribution coefficient of light and middle rare earth metal ions with tetraoctyl diglycolamide (TODGA) - A DFT study S. Mondal, M. Anitha, **D.K. Singh**, Sk. Musharaf Ali, Journal of Molecular Liquids, 426 (2025) 127466.
3. Achieving Selective U(VI) and Pu(VI) Extraction from Acidic Waste: Robust Polyethersulfone Composite Beads with Tailored Ligands, Satya Ranjan Guchhait, P. Banerjee, A. Karak, Kankan Patra, G. Singh, Arijit Sengupta, Partha Sarathi, T. P. Valsala, D.

- B. Sathe, R.B. Bhatt, **D.K. Singh**, Kartikey K. Yadav, Separation Science and Technology, 2025; <https://doi.org/10.1080/01496395.2025.2486249>.
4. Sustainable Plutonium Separation: Development and Evaluation of Polyethersulfone-Tri-isoamyl Phosphate Composite Beads, Satya Ranjan Guchhait, Kankan Patra, A. Karak, Arijit Sengupta, D. B. Sathe, R.B. Bhatt, **D.K. Singh**, Kartikey K. Yadav, Separation Science and Technology, 2025; <https://doi.org/10.1080/01496395.2025.2478428>.
 5. Targeted Uranium Recovery: Leveraging Tri-isoamyl Phosphate Encapsulated Polyethersulfone Composite Beads for Efficient Recovery from Acidic Solutions, Satya Ranjan Guchhait, Kankan Patra, P. Banerjee, Arijit Sengupta, D. B. Sathe, R.B. Bhatt, Kartikey K. Yadav, **D.K. Singh**, Separation Science and Technology, 2025; <https://doi.org/10.1080/01496395.2025.2476166>.
 6. Study on the extraction of neodymium metal by calciothermic reduction process, Deepak Kumar Sahoo, Prafulla S Sarode, D. N.Ambare, S. Mondal, **Dhruva K Singh**, Mineral Processing and Extractive Metallurgy: Transactions of the Institutions of Mining and Metallurgy, 2024, Vol.133 (3) 101-108.
 7. Sustainable Recycling of Copper from Printed Circuit Boards with Iminodiacetamide Resin: Transformation from Electronic Scrap to Copper Oxide Nanoparticles, Ritesh Ruhela, Nikhilesh Iyer, Chitrarekha Limje, Ashok Kumar Yadav, Manoj Yadav, Madhavi Vartak, Dibyendu Bhattacharyya, **Dhruva Kumar Singh**, ACS Sustainable Chem. Eng., 2024, 12, 687-694.
 8. Rapid and reliable assaying of Tc-99 in sediment samples with novel MTPN polymeric resin, Amar D. Pant, R. Ruhela, Anilkumar S. Pillai, **D.K. Singh**, B.S. Tomar, Journal of Environmental Radioactivity, 270 (2023) 107297.
 9. Study of plutonium recovery from acidic feed using polyethersulfone encapsulating TBP, DEHPA, and mixture of TBP and DEHPA beads, Satya Ranjan Guchhait, Kankan Patra, Kartikey K. Yadav, **D.K. Singh**, Arijit Sengupta, T. P. Valsala, D.B. Sathe & R.B. Bhatt, Separation Science Technology, 58 (2023) Nos.15-16, 2846-2855.
 10. Studies on synthesis, densification and characterization of neodymium hexaboride, T R C Murthy, J Sonber, B. Paul, S. Majumdar, K Sairam, D.K. Sahoo, **D.K. Singh**, International Journal of Applied Ceramic Technology, 2024; 21: 1425-1437.
 11. Nucleation kinetics of reactive crystallization process of ammonium diuranate: Shrishma Paik, SK Satpati, **DK Singh**, Indian Chemical Engineer, 2023, Vol. 65, No. 6, 527-542.
 12. Selective Removal of uranium from aqueous streams using synergistic adsorbents, Amrita Das, J. Gupta, N. Gupta, R. H. Banerjee, M. Anitha, **D.K. Singh**, Inorganic Chemistry Communications, 156 (2023) 111284.
 13. Combined Experimental and Theoretical Insights on Selectivity of Rare Earth Elements with Tetra-2-ethylhexyl Diglycolamide, S. Mondal, M. Ali, **D. K. Singh**, Chemistry Select; 8 (33), doi.org/10.1002/slct.202301842.

14. High temperature structure and vibrational properties of GdVO₄, M. Anitha, K. Sandeep, Rajak Syed, S. Kesari, R. Rao, **D.K. Singh**, S.N. Achary, Vivekanand Kain. *Materials Chemistry and Physics*, 295 (2023) 127120.
15. Studies on hydrometallurgical recovery of rare earth elements as mixed fluoride compound from coal fly ash using environmentally friendly organic acid, Ram Karan, T Sreenivas, **D K Singh**, *Separation Science & Technology*, 2023, Vol. 58, Nos. 15-16, 2856-2866.
16. Developing N,N,N',N'-tetra (2-ethylhexyl) diglycolamide encapsulated polymeric beads as promising rare earth extracting agents, Dibyasree Choudhury, Kartikey K. Yadav, **D.K. Singh**, V. Kain, *Separation Science & Technology*, 2023, Vol. 58, Nos. 15-16, 2665-2676.
17. Parametric optimization of Sm(III) extraction from nitrate media by employing hollow fiber membrane using Taguchi analysis, Kartikey K. Yadav, Dibyasree Choudhury, **D. K. Singh**, V. Kain, *Separation Science & Technology*, 2023, Vol. 58, Nos. 15-16, 2655-2664.
18. Recovery of rare earth elements from coal flyash using deep eutectic solvents as leachants and precipitating as oxalate or fluoride. Ramkaran, T. Srinivas, Ajay Kumar, **D. K. Singh**, *Hydrometallurgy* 214(2022) 105952.
19. A novel approach of precipitation of ammonium diuranate (ADU) by sonochemical route, Shrishma Paik, S. K. Satpati, **D. K. Singh**, *Progress in Nuclear Energy* 143 (2022) 104034.
20. Intensified gaseous phase precipitation of ADU through ultrasonic-assisted route, Shrishma Paik, SK Satpati, **D. K. Singh**, *Journal of Radioanalytical and Nuclear Chemistry* 331, pages 4227–4237 (2022)
21. Study on the effects of sonication on reactive precipitation of ammonium uranyl carbonate from pure uranyl nitrate solution, Shrishma Paik, S.K. Satpati, S.K. Gupta, M.L. Sahu, **D. K. Singh**, *Journal of Nuclear Materials* 557 (2021) 153222.
22. Extraction behavior of yttrium with Aliquat336 from nitrate and thiocyanate media: A microscopic view from computational analysis; Pal, U.; Yadav, K. Kartikey, **Singh, D. K.**, Saha-Dasgupta, T.; *Materials Today Communications*, 2021, 28, 102603.
23. Luminescence and Structural Properties of Ytterbium and Erbium Co-doped LaGaO₃ Nanophosphor for Up-conversion by polyol method, Rajak Syed, Anitha Mallavarapua, V. Sudarsan, Sandeep Kumar Agarwalla, **D. K. Singh**, Vivekanand Kain, *Solid State Sciences*, 117(2021) 106626.
24. Smart YPO₄: Er Yb Nanophosphor for Optical Heating, Hyperthermia, Security Ink, Cancer Endoradiotherapy and Uranyl Recovery, Authors: Abhishek Kumar Soni, Kartikey Kumar Yadav, Bheeshma Pratap Singh, Rashmi Joshi, Sudipta Chakraborty, Rubel Chakravarty, Naveen Kumar Nagaraja, **D. K. Singh**, Vivekanand Kain, Ashutosh Dash, Raghmani Singh Ningthoujam, *ACS Appl Nano Mater.*,4 (2021)850-860.
25. Shiny S. Kumar, A. Rao, K. K. Yadav, R. K. Lenka, **D. K. Singh**, B.S. Tomar, Selective removal of Am (III) and Pu (IV) from analytical waste solutions of quality control operations using extractant encapsulated polymeric beads, *Journal of Radioanal. Nucl. Chem*, 324(2020), 375-384.

26. Recovery of Rare Earth Elements from Coal Fly Ash Using TEHDGA Impregnated Resin, S. Mondal, A. Ghar, A. K. Satpati, P. Sinharoy, **D. K. Singh**, J.N. Sharma, T. Sreenivas, V. Kain, *Hydrometallurgy*, 185 (2019) 93-101.
27. Effect of electrolytic composition on current efficiency and alloy composition in electrowinning of Pr-Mg alloys using chloride electrolyte"; D. K. Sahoo, M. Anitha, **D. K. Singh**, V. Kain; *Mineral Processing and Extractive Metallurgy (Trans. Inst. Min. Metall. C)* 2019, DOI: 10.1080/25726641.2019.1677076, pp 1-8.
28. Separation of terbium from aqueous phase employing hollow fibre supported liquid membrane with EHEHPA as carrier, Kartikey K. Yadav, **D. K. Singh**, V Kain, *Separation Science & Technology*, 54 (2019) 1521-1532.
29. NdFeB magnet recycling: Dysprosium recovery by non-dispersive solvent extraction employing hollow fibre membrane contactor, Kartikey K. Yadav, M. Anitha, **D. K. Singh**, V. Kain, *Separation and Purification Technology*, 194 (2018) 265-271.
30. Process for recovery of uranium from low-grade SDU of phosphoric acid/ D2EHPA-TBP plant origin using DHOA/n-dodecane solvent, S. Mondal, Vikas Kumar, **D.K. Singh**, J.N. Sharma, T. Sreenivas, V. Kain, *Separation and Purification Technology* 189 (2017) 341–346.
31. Development of a phosphate precipitation process for the recovery of uranium from carbonate ore leach liquor, **D. K. Singh**, T. Sreenivas, V. Kain, G. K. Dey, *Hydrometallurgy* 171 (2017) 228-235.
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36. Taguchi optimisation of process parameters for electrowinning of praseodymium metal in molten salt electrolysis, D. K. Sahoo, M. Anitha, S. Mondal, **D. K. Singh**, R. Mishra, V. Kain, *Mineral Processing and Extractive Metallurgy (Trans. Inst. Min. Metall. C)* 126 (2017) 231-237.
37. A new bisglycolamide substituted calix-benzo-crown-6 in 1, 3-alternate conformation as a selective ionophore for Cesium (I): Combined experimental and density functional theoretical investigation, Vikas Kumar, J. N. Sharma, P. V. Achuthan, **D. K. Singh**, S.K Musharaf Ali, *RSC Advances*, 6 (2016) 47120-47129.

38. Recovery of uranium from phosphoric acid: a review, **D. K. Singh**, S. Mondal, J. K. Chakravarty, *Solvent Extraction and Ion Exchange*, 34 (2016) 201-225.
39. Parametric optimization for leaching of cobalt from Sukinda ore of lateritic origin - A Taguchi approach, S. Mondal, B. Paul, V. Kumar, **D. K. Singh**, J. K. Chakravarty, *Separation and Purification Technology*, 156 (2015) 827-834.
40. Sorption behavior of Y(III) from chloride medium with polymer composites containing di-2-ethyl hexyl phosphoric acid and multiwall carbon nanotube, K. K. Yadav, K. Dasgupta, **D. K. Singh**, M. Anitha, R. K. Lenka, L. Varshney, H. Singh, *Separation Science and Technology*, 50 (2015) 463-470.
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42. Solvent extraction studies of rare earths from thiocyanate medium with N,N,N',N'- tetra (2-ethyl hexyl) diglycolamide, M. Anitha, M. K. Kotekar, **D. K. Singh**, J. N. Sharma, H. Singh, *Separation Science and Technology*, 50 (2015) 430-436.
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Selected Invited Talk: (Delivered during 2015-2024)

1. Title: “Resource sustainability of Critical & Rare Earths through Recycling”, AICTE Training and Learning (ATAL) Online 6 Days Faculty Training Programme on “Rare Earth Based Novel Nano-materials / Materials for Various Applications” organized by the Department of Chemistry, School of Humanities and Basic Sciences, Ramdeobaba University, Nagpur, Maharashtra in association with the Bhilai Institute of Technology, Durg, Chhattisgarh on Saturday dated 14th December 2024.
2. Title: “Minerals to Materials: Advancing Rare Earth Technologies at BARC”, Theme Meeting the Role of Rare Earth Metals, Alloys & Compounds for Self-Reliant India” 11th December 2024, Multipurpose Hall, TSH, Anushaktinagar, Mumbai-400094.
3. Title: “Current scenario of Rare Earth, Uranium and less common metal separation from lean Secondary sources through different hydrometallurgical routes”, Lecture Hall, SCF, Computer Division, BARC, 11th November, 2024.
4. Title: “Recovery Paradigm of Rare Earth Metals and Critical Minerals for Sustainable Energy Security”, Fuel, Minerals & Metallurgical Engineering IIT (ISM) Dhanbad, 24th October, 2024.
5. Title: “Sustainable Recovery of Rare Earths and Critical Metals from Primary and Secondary Sources: A pathway to Energy Security”, ODICHEM – 2024, Bhubaneswar, 18th & 19th October, 2024.
6. Title: “Advancing Sustainability: Recovery of Rare Earths and Critical Metals from Industry Waste for Energy Security”, CIRCON – 2024, Circular economy Conference, Industrial By-Product Utilization and Value Creation, SNTI Auditorium, Jamshedpur, 3rd & 4th October, 2024.
7. Title: “Rare Earths Resource Processing for Establishing Value Supply Chain”, SESTEC - 2024, HSNC University, Worli; 13rd July 2024.
8. Title: “Recycling of Rare Earth for Sustainability & Value Supply Chain”, 8th June 2024 International Conference on Fundamental and Advanced Research in Chemistry (FARC) 2024, IIT Mandi, Himachal Pradesh.
9. Title: “A Step towards Resource Sustainability and Value Supply Chain of Rare Earths”, NML Jamshedpur, 27th November 2023.
10. Title “Rare Earths Resource Processing for Sustainability and Establishing Rare Earth Value Chain in the Country”, IIM, ATM-NMD 2023, KIT, Bhubaneswar 17-19 November 2023.
11. Title: “Establishing Rare Earth Value Chain in India”, 5th September 2023, JNARDDC, Nagpur.
12. Title “Rare Earths Resource Processing for Establishing Value Supply Chain, International Conference on Science, Technology and Applications of Rare Earths, ICSTAR - 2024,

Trivandrum, 22nd August 2024.

13. Title: “Emerging Separation Technologies for Rare Earths Resource Processing”, Rare Earths for Energy Security, REES, 18-19th August 2023, Goa.
14. Title “Establishing Rare Earths Value Chain in India”, IMMT Bhubaneswar, 27th June 2023.
15. Title: ‘Separation of Rare Earths: Challenges & Innovations”, Proceedings of National Conference on Science, Technology and Application of rare Earths (STAR 2022) S V University, Tirupati, September 22-23, 2022, P.22.
16. Title: “Rare Earths Sustainability: Developing Rare Earth Value Chain in India”, AMPCO-2022 (17-19 October 2022) "Materials for Sustainability: Metal recycling, energy storage materials, energy conversion, or green iron-making technologies" IIT Roorkee.
17. Title: “Hydrometallurgical processing of rare earth resources for value addition”, The IIM-ATM 2022, 13-16 November 2022, Hyderabad.
18. Title: “Development of technologies for rare earths value chain in India”, ASSET Special Half Day Seminar on 27-9-2022, BARC, Mumbai.
19. Title: “Hydrometallurgical processing of rare earth resources for value addition”, Mineral processing Division Colloquium, Hyderabad, 14th November 2022.
20. Title: “Role of BARC in Developing Rare Earth Value Chain in India”, Analytical Chemistry Division Seminar, BARC, Mumbai, 10th June 2022.
21. Title: “Novel process & refining techniques- special emphasis on heavy rare earths, Conference on rare Earths Road Map for Energy Security of Self-Reliant India” (REES - 2021) organized by REAI; Platinum Jubilee Celebration of IREL (India) Limited, 18-19th August 2021, Bhubaneswar, p.29.
22. Title: “Separation of Rare Earths: Demand, Development and Application in DAE”, Symposium on Science, Technology & Applications of Rare Earths (STAR-2019), DAE Convention Centre, Anushaktinagar, Mumbai, December 5-7, 2019.
23. Title: “Processing of Rare Earths: Strategy for their Separation”, presented virtually in CanmetMINING REE program Technical Workshop at Saskatchewan Research Council, Saskatoon, SK, Canada, December 5-6, 2019.
24. Title: “Separation Paradigm of Heavy Rare Earths from Primary and Secondary Resources”, Emerging Trends in Rare Earths (ETRE-2019) OSCOM, IREL, 24th November 2019.
25. Title: “Role of Rare Earths Materials in Clean Energy Technologies and Their Availability”, Science, Yoga & innovations: Transforming Higher Education through Knowledge Interfaces, Munger University, August 21-22, 2019.
26. Title: “Wealth from Waste: Recovery of Rare Earths, Interactive Meet on Productive Utilization of Red Mud (Bauxite Residue)”, Hotel Le Méridien, New Delhi organized by Ministry of Mines & JNARDDC, Nagpur, 26th July, 2019.
27. Title: “Hydrometallurgical separation of high-purity rare earths from various resources” Keynote Lecture, NMD-ATM 2018 of Indian Institute of Metals, November 14-16, 2018, Kolkata.
28. Title: “Recycling of rare earths from magnetic waste materials” in International Conference

- on Science, Technology and Applications of Rare Earths, September 23-25, 2018, Tirupati, Andhra Pradesh.
29. Title: “Overview on trends in monazite processing for the recovery of rare earths” in International Conference on Science, Technology and Applications of Rare Earths, September 23-25, 2018, Tirupati, Andhra Pradesh.
 30. Title “Phosphatic resources: a valuable wealth of rare earths, 22nd International Conference on Non-ferrous Minerals & Metals – 2018, July 6-7, 2018, Hotel Chanakya BNR, Ranchi.
 31. Title: “Rare earths: Importance and challenges in their separation, Emerging Trends in Separation Science and Technology (SESTEC 2018) May 23-26, 2018, BITS Pilani Campus, Goa.
 32. Title: “Rare earths recycling: leaching studies on NdFeB magnet scrap / Recovery of rare earths from secondary sources”, in National Conference on Waste to wealth in Mineral and Metallurgical Industries, 9-10th March, 2018, CSIR-Institute of Minerals and Materials Technology, Bhubaneswar.
 33. Title: “Recovery of Uranium from Secondary Sources” D. K. Singh & V. Kain, MIT 17, National Conference on Critical and Strategic Materials for Advanced Technologies (CSMAT 2017), March 9-11, 2017, Munnar, Kerala, p. 22.
 34. Title: “Hydrometallurgical Processing of Rare Earths Concentrate” in Workshop on Rare Earth Technology Development (RETD)-2016, IIT, Bhubaneswar, September 4, 2016.
 35. Title: “Wonderful World of Rare Earths” Guest Lecture at M. D. College of Arts, Science & Commerce, Parel, Mumbai, December 8, 2016.
 36. Title: “Rare Earths Recovery and Applications” Special Lecture at Institute of Chemical Technology, Mantunga, Mumbai for IChE, December 17, 2016.
 37. Title: “Recovery of rare earths from secondary sources” D. K. Singh, V. Kain, Challenges in the Processing and Recycling of Rare Earths (CIPRE), 18-21 July 2016, TRDDC, Pune, India. IL-3, p.25.
 38. Title: “Green separation process for rare earths by extractant encapsulated polymeric composite beads”, D. K. Singh, Kartikey K. Yadav, International Conference on Frontiers at the Chemistry-Allied Science Interface (FCASI-2016), University of Rajasthan, Jaipur, April 25-26, 2016, IL-10.
 39. Title: “Polymeric Composite Materials for Rare Earths Separation” in National Conference on Recent Advances in Chemical and Environmental Sciences: Emphasis on Material Science, RACE2016, ITM University, Gwalior, March 4-5, 2016.
 40. Title: “Rare Earths: Importance and Challenges in their Separation”, Minerals and Metals Production from Mine to Market, December 15-16, 2015, Trinity Hall, Cambridge, UK.
 41. Title: “Role of Analytical Science in Solvent Extraction Processing” National Conference on Analytical Science and Technology 2015, September 24-26, 2015, Munnar, Kerala.
 42. Title: “Rare earths: critical elements for various applications and challenges in their separation” in International Conference on Science, Technology and Application of Rare Earths (STAR 2015), April 23-25, 2015, Thiruvananthapuram, Kerala.

