Curriculam Vitae

Dr. Sadia Ilyas

Ph.D. in the Major of Inorganic Chemistry

[Specialization: Bio-Solvo-Chemical Extraction of Critical and Strategic Minerals with focused areas on Battery elements, Circular economy, Recycling and waste management, Sustainable (critical) raw materials]

BrainPool Scientist, National Research Foundation of Korea

Professor (Research), Hanyang University, Seoul, South Korea

E-mail ID: sadiailyas1@yahoo.com

Academic curriculam

Ph.D. (Dec 2011): Inorganic Chemistry

Department of Chemistry, University of Agriculture Faisalabad (UAF), Punjab, Pakistan

Thesis title: Bioleaching of metals from ores and electronic scraps

M.Phil. (Oct 2005): Inorganic Chemistry

Department of Chemistry, Bahauddin Zakaria University, Multan, Pakistan

Thesis title: Bioprocessing of metals from low grade ores and its commercial prospects

M.Sc. (Dec 2002): Inorganic Chemistry

Department of Chemistry, Bahauddin Zakaria University, Multan, Pakistan

Research interests

- Waste minimization and sustainable process development to reclaim the energy-critical and strategically-conflict metals from reverted/waste secondary resources.
- Critical raw materials to renewable and low-carbon energy including rare earth elements.
- Hydrometallurgy of ores, fines, and urban mines using leaching, solvent extraction, adsorption, and precipitation routes for the extraction and recovery of rare earth elements, energy-critical metals, and precious metals.
- Bioleaching and biosorption for treating the primary and secondary resources, and industrial effluents for the recovery of critical and rare metals.
- Recycling of end-of-life materials (including electronic waste) for the resources' recovery and sustainable treatment of solid and liquid wastes by applying the various techniques of bio and hydro metallurgy.
- Up-scaling of process from laboratory scale to pilot scale using columns and STR.

Work experiences

Nov 2019 to-date: Brain Pool Scientist National Research Foundation of Korea (NRF), Republic of Korea.

Involved in precursor preparation for green energy application of rare and critical metals following the up-scaling of integrated bio-solvo-chemical extraction approach.

Mar 2022 to-date: Professor (Research) in the Department of Earth Resources & Environmental Engineering, Hanyang University, Seoul, Republic of Korea.

Involved in inter-disciplinary applied works that includes the biotechnology, environmental science, inorganic chemistry, bio-geo-mineralization, and the solid-liquid and liquid-liquid mass transfer of heavy and valuable metal ions. Development of advance recycling technology for the recovery of rare and critical metals from various secondary resources with a particular focus on bio-circular economy and green-deal.

Mar 2020 to Feb 2022: Associate Professor (Research) in the Department of Mineral Resources and Energy Engineering, Jeonbuk National University, Jeonju, Jeonbuk 54896, Republic of Korea.

Involved in the advance recycling technology for the recovery of rare and critical metals from various primary and secondary sources with a particular focus on sustainable urban mining and bio-circular economy.

Jan 2015 to Oct 2019: Assistant Professor in the Dept. of Chemistry, University of Agriculture Faisalabad (UAF) Pakistan.

Involved in the teaching and research of interdisciplinary inorganic and environmental chemistry, hydro(& bio)metallurgy, advance analytical techniques

Mar 2014 to Jan 2015: Assistant Professor in the Dept. of Chemistry, GC University Faisalabad (GCUF) Pakistan.

Involved in the teaching of interdisciplinary environmental and inorganic chemistry

Feb 2012 to Feb 2014: Postdoctoral Fellow in the Dept. of Mineral Resources Research Division, Korea Institute of Geoscience & Mineral Resources (KIGAM), Daejeon 305-350, Republic of Korea.

Involved in various R&D projects to extract different metal values from urban mine resources using the hydro & bio metallurgical techniques

Dec 2010 to Dec 2011: Senior Researcher, School of Chemical Engineering and Pharmacy of Wuhan Institute of Technology, Wuhan, China.

Involved in the research for biometallurgical extraction of metals from e-waste at column scale, guidance to Ph.D. students

Oct 2009 to Oct 2010: Research Fellow in School of Chemical Engineering and Pharmacy of Wuhan Institute of Technology, Wuhan, China.

Involved in the research for biometallurgical extraction of metals from different ore bodies at laboratory scale

Oct 2005 to Apr 2007: Lecturer in the Dept. of Chemistry, GC University Faisalabad (GCUF) Pakistan.

Involved in the teaching of industrial inorganic chemistry and research work in NIBGE under the Atomic Energy Commission of Pakistan.

Supervision/Member supervisory committee (in brief)

- Supervised 45 M.Sc., 41 M.Phil. and 2 Ph.D. students as main supervisor, and 46 M.Phil. students supervised as member (second) of supervisory committee during last five years.

Lab organization and projects handling

- Laboratory facilities: Establishment of mineral and material chemistry laboratory in Dept. of Chemistry, University of Agriculture, Faisalabad, Pakistan.
- National Research Foundation of Korea: Novel green technology for rare and critical metal extraction by integrating biotechnology with solvo-chemical approach (South Korea).
- National Research Foundation of Korea: Novel recycling of spent catalytic converters for the circular economy of platinum group metals using green bio-chemical strategies (South Korea).
- Extension Project: International Collaborative Project with University of Agriculture, Faisalabad and Korea Institute of Geoscience and Mineral Resources.
- Completed Projects: Bio-mineralization of low-grade sulphide ores by indigenous heterotrophs (Sponsored by HEC Pakistan).
- Bioprocessing of low-grade chalcopyrite with moderate thermophiles, completed at NIBGE.
- Bioleaching of low grade Pb-Zn ores with chemolithotrophs, completed at NIBGE.
- Bioprocessing of metals from computer PCB circuit boards, completed at NIBGE.
- Feasibility analysis of bioleaching of PCBs up to lab scale column level, completed at WIT.
- Column bioleaching test of low-grade mining ores, completed at WIT.

- Biotechnological recycling of critical metals from e-waste and the assessment of circular economy and contribution to CO_2 mitigation in comparison to the exploitation of primary minerals, completed at UAF.
- Total recycling of spent Li-ion batteries and compatibility of hydrometallurgical techniques to mitigation of primary reserves supply risks, completed at UAF
- Integrated treatment of two industrial wastes for a sustainable environmental solution with recovery of the metals therein, completed at UAF.
- Molybdenum and rhenium recovery from molybdenite leach liquors, completed at UAF.
- Effluent treatment for heavy metals and mineral acid recovery, completed at UAF.
- Leaching studies of ESP dust collected from a copper smelter to recover the Zn and Cu, completed at UAF.
- Selective recovery of Cu and Ni metal powders from sulfate leach liquor using a hydrothermal reduction process, completed at UAF.

Merits and honours

- Fellowship of Wuhan Institute of Technology, Hubei govt., China (as researcher fellow during Ph.D.) 2008-09.
- Fellowship of Wuhan Institute of Technology, Hubei govt., China (as senior researcher) 2010-11.
- Three research articles among most cited top 25 papers of Hydrometallurgy, Elsevier.
- Best paper award in oral presentation at ACN International Conference (2020) held in Pune, India.
- SARC excellent paper award in International Conference on Renewable, Environment and Agriculture (2021) held in Perth, Australia.
- Best Paper award in Resource Recycling (2021) by the Korea Institute of Resource Recycling.

International consultancy and technology transfer

- Technology transfer to Al-Noor Processing & Textile Mills (Pvt.) Ltd, Faisalabad (Pakistan) for “Treating the acidic effluent generated in textile manufacturing”.
- International consultancy on the processing of Ilmenite for Ti recovery given to KIGAM,

Korea.

- Letter of Appreciation from CRC Press (Taylor & Francis Group) for being evaluated excellent to my Edited and Authored book “Gold Metallurgy and the Environment” in the category of Material Science and Environment.
- Best paper award in oral presentation at ACN International Conference (2020) held in Pune, India.
- International consultancy to DONGA BIO FUELS (INDIA) in November 16~18, 2020 for “Precipitation of (pink) Co-hydroxide from sulfate leach solution”.
- R&D cooperation between Jeonbuk National University (Korea) and Hydromet Solutions Pvt. Ltd. (India).
- International consultancy to DONGA BIO FUELS (INDIA) in February 2~4, 2021 for “Decolorization of Bio-diesel”.
- International Technology Transfer to Burakia Industries Limited (India) for the “Pretreatment recovery of lead and tin metals from waste printed circuit boards before valuable metals extraction” a part of the work conducted during the current BP project and a part of patent KR 10-2243077 and PCT/KR2021/004603.

Patents

- **10-2143162** - 4 August, 2020- Recovery method of residual metals via hydrometallurgical treatment of electroplating solution (Korea patent).
- **10-2137174**- July 17, 2020- Critical metal recovering method from exhausted lithium ion batteries (Korea patent).
- **PCT/KR2020/005414**- April 24, 2020- Method of recovering metals remaining in plating wastewater using wet treatment process.
- **10-2243077**- April 15, 2021- Critical metal recovering method from waste/discarded printed circuit boards (Korea patent).
- **PCT/KR2021/004603**- April 13, 2021- Novel Integrated Process for Recycling of Critical Metals from Printed Circuit Boards.

Scientific publication in peer-reviewed SCI/E journals

1. **Sadia Ilyas**, H. Kim (2022). Recovery of platinum-group metals from an unconventional source of catalytic converter using pressure cyanide leaching and ionic liquid extraction. JOM, online published https://doi.org/10.1007/s11837-021-05119-6 (I.F. 2.46)
2. **Sadia Ilyas**, H. Kim (2022). Intensive leaching of red phosphorus rare earth metals from waste fluorescent lamp: parametric optimization and kinetic studies. JOM, online published https://doi.org/10.1007/s11837-021-05112-z (I.F. 2.46)
3. **Sadia Ilyas**, H. Kim, R.R. Srivastava (2022). Separation of platinum group metals from model chloride solution using phosphonium-based ionic liquid. Separation and Purification Technology, vol. 278, Article 119577. (I.F. 7.312).
4. **Sadia Ilyas**, R.R. Srivastava, H. Kim, N. Ilyas (2022). Biotechnological recycling of hazardous waste PCBs using *Sulfobacillus thermosulfidooxidans* through pretreatment of toxicant metals: Process optimization and kinetics studies. Chemosphere, vol. 286, Article 131978. (I.F. 7.086).
5. **Sadia Ilyas**, R.R. Srivastava, H. Kim (2021). O_2-enriched microbial activity with pH sensitive solvo-chemical and electro-chlorination strategy to reclaim critical metals from the hazardous waste printed circuit boards, Journal of Hazardous Materials, vol. 416, Article 125769. (I.F. 10.5).
6. **Sadia Ilyas**, R.R. Srivastava, H. Kim (2021). Liquid–liquid extraction of phosphorus from sulfuric acid solution using benzyl dimethyl amine. International Journal of Minerals, Metallurgy and Materials, vol. 28(3), pp. 367-372. (I.F. 1.713).
7. **Sadia Ilyas**, R.R. Srivastava, H. Kim (2021). Hydrometallurgical Recycling of Rare Earth Metal–Cerium from Bio-processed Residual Waste of Exhausted Automobile Catalysts, JOM, vol. 73, pp. 19–26. (I.F. 2.46).
8. S. Choi, **Sadia Ilyas**, G. Hwang, H. Kim (2021). Sustainable treatment of bimetallic (Ag–Pd/α-Al2O3) catalyst waste from naptha cracking process: An innovative waste-to-value recycling of precious metals, Journal of Environmental Management, vol. 291(1), Article 112748. (I.F. 6.789).
9. S.K. Solongo, A. Gomez-Flores, **Sadia Ilyas**, H. Kim (2021). Roles of solution chemistry and reagent–reagent interaction on carboxymethylcellulose adsorption onto graphite and

implications on its floatability. Minerals Engineering, vol. 167(1), Article 106873. (I.F. 4.765).

10. H. Kim, H. Zhao, **Sadia Ilyas** (2021). Editorial on Special Issue “Surface Chemistry in Mineral Processing and Extractive Metallurgy. Minerals, vol. 11(1), Article 13. (IF. 2.644).
11. **Sadia Ilyas**, R.R. Srivastava, H. Kim (2021). Gold recovery from secondary waste of PCBs by electro-Cl_2 leaching in brine solution and solvo-chemical separation with tri-butyl phosphate, Journal of Cleaner Production, vol. 295, Article 126389. (I.F. 9.297).
12. **Sadia Ilyas**, H. Kim, R.R. Srivastava, S. Choi (2021) Cleaner production of rare earth elements from phosphorus-bearing sulfuric acid solution of vein deposit monazite. Journal of Cleaner Production, vol. 278, Article 123435. (I.F. 9.297).
13. **Sadia Ilyas**, R.R. Srivastava, H. Kim, S. Das, V.K. Singh (2021). Circular bioeconomy and environmental benignness through microbial recycling of e-waste: A case study on copper and gold restoration, Waste Management, vol. 121, pp. 175–185. (I.F. 7.145).
14. **Sadia Ilyas**, H. Kim, R.R. Srivastava (2021) Extraction equilibria of cerium(IV) with Cyanex 923 followed by precipitation kinetics of cerium(III) oxalate from sulfate solution. Separation and Purification Technology, vol. 254, Article 117634. (I.F. 7.312).
15. R.A. Silva, J. Park, **Sadia Ilyas**, D. Borja, H. Zhao, M. Urík, S.O. Rastegar, H. Kim (2020). Biodegradation mechanism of arsenopyrite mine tailing with Acidithiobacillus ferrooxidans and influence of ferric supplements. International Biodeterioration & Biodegradation, vol. 153, Article 105042. (I.F. 4.32).
16. **Sadia Ilyas**, R.R. Srivastava, H. Kim (2020) Disinfection technology and strategies for COVID-19 hospital and bio-medical waste management. Science of the Total Environment, vol. 749, Article 141652. (I.F. 7.963).
17. R.R. Srivastava, **Sadia Ilyas**, H. Kim, S. Choi, H.B. Trinh, M.A. Ghauri, N. Ilyas (2020) Biotechnological recycling of critical metals from waste printed circuit boards. J Chem Technol Biotechnol vol. 95, pp. 2796-2810. (I.F. 2.750).
18. J. You, S.K Solongo, A. Gomez-Flores, S. Choi, H. Zhao, M. Urík, **Sadia Ilyas**, H. Kim (2020) “Intensified bioleaching of chalcopyrite concentrate using adapted mesophilic culture in continuous stirred tank reactors”, Bioresource Technology, vol. 307, Article 123181 (I.F. 9.642).

19. S. Choi, G. Hwang, **Sadia Ilyas**, Y. Han, N.V. Myung, B. Lee, Y. Song, H. Kim (2020) “Inorganic Nanofiber as a Promising Sorbent for Lithium Recovery”, Separation and Purification Technology, vol. 242, Article 116757. (I.F. 7.312).
20. H. Munir, R.R. Srivastava, H. Kim, **Sadia Ilyas**, M.K. Khosa, B. Yameen (2020) “Leaching of exhausted LNCM cathode batteries in ascorbic acid lixiviant: a green recycling approach, reaction kinetics and process mechanism”, J Chem Technol Biotechnol, vol. 95, pp. 2286-2294. (I.F. 2.750).
21. A. Gomez-Flores, S.K. Solongo, G.W. Heyes, **Sadia Ilyas**, H. Kim (2020) “Bubble−particle interactions with hydrodynamics, XDLVO theory, and surface roughness for flotation in an agitated tank using CFD simulations”, Minerals Engineering, vol. 152, Article 106368 (I.F. 4.765).
22. S.K. Solongo, A. Gomez-Flores, J. You, S. Choi, G.W. Heyes, **Sadia Ilyas**, J. Lee, H. Kim (2020) “Cationic collector conformations on an oxide mineral interface: Roles of pH, ionic strength, and ion valence”, Minerals Engineering, vol. 150, Article 106277 (I.F. 4.765).
23. **Sadia Ilyas**, R.R. Srivastava, H. Kim, H.A. Cheema (2020) “Hydrometallurgical recycling of palladium and platinum from exhausted diesel oxidation catalysts”, Separation and Purification Technology, vol. 248, Article 117029 (I.F. 7.312).
24. R.R. Srivastava, **Sadia Ilyas**, H. Kim, N.L.M. Tri, N. Hassan, M. Mudassir, N. Talib (2020) “Liquid-Liquid Extraction and Reductive Stripping of Chromium to Valorise the Critical Metal from Industrial Effluent”, JOM, vol. 72, no. 2, pp. 839–846. (I.F. 2.46).
25. **Sadia Ilyas**, R.R. Srivastava, H.J. Kim, N. Ilyas, R. Sattar (2020) “Extraction of nickel and cobalt from a laterite ore using the carbothermic reduction roasting-ammoniacal leaching process”. Separation and Purification Technology, vol. 232, Article 115971 (I.F. 7.312).
26. R. Sattar, **Sadia Ilyas**, S. Kousar, A. Khalid, M. Sajid, S.I. Bukhari (2020) “Recycling of end-of-life $LiNi_xCo_yMn_zO_2$ batteries for rare metals recovery”, Environmental Engineering Research, vol. 25(1), pp. 88–95. doi/10.4491/eer.2018.392 (I.F. 2.507).
27. A. Ishfaq, **Sadia Ilyas**, A. Yaseen, M. Farhan (2019) “Hydrometallurgical valorization of chromium, zinc, and iron from an electroplating effluent”, Separation and Purification Technology, vol. 209, pp. 725–733. (I.F. 7.312).

28. R. Sattar, **Sadia Ilyas**, H.N. Bhatti, A. Ghaffar (2019) “Resource recovery of critically-rare metals by hydrometallurgical recycling of spent lithium ion batteries”, Separation and Purification Technology, vol. 209, pp. 725–733. (I.F. 7.312).
29. N. Ilyas, **Sadia Ilyas,** S.-u. Rahman, S. Yousaf, A. Zia, S. Sattar (2018) “Removal of copper from an electroplating industrial effluent using native and modified *spirogyra*”, Water Sci Technol, vol. 78(1), pp. 147–155. (I.F. 1.915).
30. **Sadia Ilyas**, M.-s. Kim, J.-c. Lee (2018) “Integration of microbial and chemical processing for a sustainable metallurgy”, J Chem Technol Biotechnol, vol. 93, pp. 320–332. doi:10.1002/jctb.5402 (I.F. 2.750).
31. H.A. Cheema, **Sadia Ilyas**, S. Masud, M.A. Muhsan, I. Mahmood, J.-c. Lee (2018) “Selective recovery of rhenium from molybdenite flue-dust leach liquor using solvent extraction with TBP”, Separation and Purification Technology, vol. 191, pp. 116–121. (I.F. 7.312).
32. M.A. Muhsan, **Sadia Ilyas**, H.A. Cheema, S. Masud (2017) “Recovery of nitric acid from effluent streams using solvent extraction with TBP: a comparative study in absence and presence of metal nitrates”, Separation and Purification Technology, vol. 186, pp. 90–95. (I.F. 7.312).
33. H.B. Trinh, J.-c. Lee, R.R. Srivastava, S. Kim, **Sadia Ilyas** (2017) “Eco-threat minimization in HCl leaching of PGMs from spent automobile catalysts by formic acid prereduction”, ACS Sustainable Chem Eng, vol. 5, no. 8, pp. 7302–7309. (I.F. 8.198).
34. **Sadia Ilyas**, M.-s. Kim, J.-c. Lee, A. Jabeen, H.N. Bhatti (2017) “Bio-reclamation of Strategic and Energy Critical Metals from Secondary Resources”, Metals, vol. 7(6), Article 207. (I.F. 2.351).
35. S. Nouren, H.N. Bhatti, **Sadia Ilyas** (2016) “Statistical optimization for enhanced decolorization of Golden Yellow PRA by Citrus reticulata var. kinnow peroxidase and phytotoxicity evaluation of its degraded products”, Desalination and Water Treatment, vol. 57, no. 36, pp. 16981–16994. (I.F. 1.234).
36. J. Mustafa, A. Kausar, H.N. Bhatti, **Sadia Ilyas** (2016) “Sequestering of uranium (VI) onto eucalyptus bark: kinetic, equilibrium and thermodynamic studies”, Desalination and Water Treatment vol. 57, no. 31, pp. 14578–14589. (I.F. 1.234).

37. S. Noreen, H.N. Bhatti, Z. Farrukh, **Sadia Ilyas**, M.A. Jamal (2016) “Continuous fixed bed removal of Novacron Orange P-2R using sugarcane bagasse: prediction of breakthrough curves”, Desalination and Water Treatment, vol. 57, no. 27, pp. 12814–12821. (I.F. 1.234).
38. Z. Naseem, H.N. Bhatti, S. Sadaf, S. Noreen, **Sadia Ilyas** (2016) “Sorption of uranium (VI) by Trapa bispinosa from aqueous solution: effect of pretreatments and modeling studies”, Desalination and Water Treatment, vol. 57, no. 24, pp. 11121–11132. (I.F. 1.234).
39. R. Iqbal, M.K. Khosa, M.A. Jamal, **Sadia Ilyas**, M.T. Hussain, M. Hamid (2016) “Synthesis and characterization of new soluble thermally stable poly(azomethine-ether-imide)s: Discerning the possibility for high temperature applications”, Polymers for Advanced Technologies, vol. 27, no. 2, pp. 221–227. (I.F. 2.578).
40. S. Noreen, H.N. Bhatti, **Sadia Ilyas,** Z.-i-H. Nazli, I. Bibi, S. Kamal (2015) “Citrus limon peroxidase catalyzed decolorizaion of textile industry effluents and toxicological evaluation of their degraded products”, Fresenius Environmental Bulletin, vol. 24, no. 12b, pp. 4685–4695. (I.F. 0.673).
41. R.R. Srivastava, M.-s. Kim, J.-c. Lee, **Sadia Ilyas** (2015) “Liquid–liquid extraction of rhenium (VII) from an acidic chloride solution using Cyanex 923”, Hydrometallurgy, vol. 157, pp. 33–38. (I.F. 4.156).
42. **Sadia Ilyas**, J.-c. Lee (2014) “Bioleaching of metals from electronic scrap in stirred tank reactor”, Hydrometallurgy, vol. 149, pp. 50–62. (I.F. 4.156).
43. **Sadia Ilyas**, J.-c. Lee (2014) “Biometallurgical recovery of metals from waste electrical and electronic equipment: a review”, ChemBioEng Reviews, vol. 1, no. 4, pp. 148–169. (I.F. 3.830).
44. **Sadia Ilyas**, J.-c. Lee, B.-S. Kim (2014) “Bio-removal of heavy metals from electronic wastes; process development and optimization”, Journal of Cleaner Production, vol. 70, no. 1, pp. 194–202. (I.F. 9.297).
45. D. Shin, J. Jeong, B.-S. Kim, **Sadia Ilyas**, J.-c. Lee (2014) “Lead Trace Removal from Electronic Scraps by Organic Acids”, Materials Transactions JIM, vol. 55, no. 3, pp. 586–590. (I.F. 0.731).

46. **Sadia Ilyas**, R. Chi, J.-c. Lee (2013) “Fungal bioleaching of metals from mine tailing”, Mineral Processing and Extractive Metallurgy Review, vol. 34, no. 3, pp. 185–194. (I.F. 2.785).
47. **Sadia Ilyas**, J.-c. Lee (2013) “Fungal leaching of metals from electronic scrap”, Minerals and metallurgical processing, vol. 30, no. 3, pp. 151–156. (I.F. 0.692).
48. **Sadia Ilyas**, J.-c. Lee, R. Chi (2013) “Bioleaching of metals from electronic scrap and its potential for commercial exploitation”, Hydrometallurgy, vol. 131–132, pp.138–143. (I.F. 4.156).
49. **Sadia Ilyas**, C. Ruan, H.N. Bhatti, I.A. Bhatti, M. A. Ghauri (2012) “Column bioleaching of low-grade mining ore containing high level of smithsonite, talc, sphaerocobaltite and azurite”, Bioprocess and Biosystem Engineering, vol. 35, no. 3, pp. 433–440. (I.F. 2.419).
50. H.N. Bhatti, S. Sarwar, **Sadia Ilyas,** (2012). Effect of Organic Acids Produced by *Penicillium notatum* on the extraction of Metals Ions from Brown Shale. Journal of Chemical Society of Pakistan, vol. 34, pp. 1040–1047. (I.F. 0.28).
51. **Sadia Ilyas**, C. Ruan, J.-c. Lee, H.N. Bhatti (2012) “One step bioleaching of arsenic containing sulphide ore by Aspergillus Niger: Taguchi orthogonal array optimization”, Chinese Journal of Chemical Engineering, vol. 20, no. 5, pp. 923–929. (I.F. 3.171).
52. S. Nouren, H.N. Bhatti, **Sadia Ilyas** (2011) “Bioleaching of copper, aluminium, magnesium and manganese from brown shale by *Ganoderma Lucidum*” African journal of Biotechnology, 10, 10664–10673.
53. B. Ahmad, H.N. Bhatti, **Sadia Ilyas** (2011) “Bio-extraction of metal ions from laterite ore by *Penicillium chrysogenum*”, African journal of Biotechnology, 10, 11196–11205.
54. **Sadia Ilyas**, H.N. Bhatti, I.A. Bhatti, M.A. Sheikh, M.A. Ghauri (2010) “Bioleaching of metal ions from low grade sulphide ore: Process optimization by using orthogonal experimental array”, African Journal of Biotechnology, vol. 9, pp. 2801–2810.
55. **Sadia Ilyas**, C. Ruan, H.N. Bhatti, M.A. Ghauri, M.A. Anwar (2010) “Column bioleaching of metals from electronic Scrap”, Hydrometallurgy, vol. 101, no. 3–4, pp. 135–140. (I.F. 4.156).
56. H.B. Ahmed, M.A. Malana, N.H. Rama, **Sadia Ilyas**, M. Yousaf, K.M.Khan (2008) “Electron Ionization Mass Spectrometric Studies Halogen-Substituted Isocoumarins and

Their 3, 4-Dihydro Derivatives", Journal of Chemical Society of Pakistan, vol. 30, pp. 126–133. (I.F. 0.28).

57. **Sadia Ilyas**, M.A. Anwar, S.B. Niazi, M.A. Ghauri (2008) "Pb-Zn ore bioleaching behaviour of pure, adapted and mixed adapted cultures of acidophilic microorganism", Journal of Chemical Society of Pakistan, vol. 30, pp. 61–68. (I.F. 0.28).
58. **Sadia Ilyas**, M.A. Anwar, S.B. Niazi, A. Ghauri (2007) "Bioleaching of metals from electronic scrap by moderately thermophilic acidophilic bacteria", Hydrometallurgy, vol. 88, no. 1–4, pp. 180–188. (I.F. 4.156).

Edited special issues of journals

- H. Kim, H. Zhao, **Sadia Ilyas** (2021), "Surface Chemistry in Mineral Processing and Extractive Metallurgy" Minerals MDPI Journal, (IF. 2.644).
- C. Xiao, C. Zheng, Y. Zhang, H. He, **Sadia Ilyas** (2021), "Application of Microbial Technology in Ecological Remediation of Mines" Frontiers in Microbiology, (IF. 5.64).

Books

- T. Ehsan, I.H. Bukhari, **Sadia Ilyas** (2014), "Synthesis and Biological Evaluation of Cu, Ni, Mn and Zn Complexes" Lambert Acad. Pub. Germany. https://www.lap-publishing.com/catalog/details//store/gb/book/978-3-659-62363-9/synthesis-and-biological-evaluation-of-Cu,-Ni,-Mn-and-Zn-complexes,ISBN;978-659-60702-8
- H. Afzal, I.H. Bukhari, **Sadia Ilyas** (2014), "Synthesis and Biological Actiities of Sn and Pd Complexes, 4- Aminophenol" Lambert Acad. Pub. Germany. https://www.lap-publishing.com/catalog/details//store/gb/book/978-3-659-60702-8/Synthesis and Biological Activities of Sn and Pd Complexes, ISBN 978-659-60702-8

Edited books

- **Sadia Ilyas**, Jae-chun Lee (2018), "Gold Metallurgy and the Environment" CRC Press Boca Raton, FL. ISBN: 978-1-138-55685-0.
- **Sadia Ilyas**, S. Ilyas, H. Kim, R. R. Srivastava (2021), "Sustainable Urban Mining of Precious Metals" CRC Press Boca Raton, FL. ISBN: 9780367517502.

Contributary book chapters

1. **S. Ilyas,** J.-c. Lee (2015), Bioprocessing of electronic scrap. In: Microbiology for Minerals, Metals, Materials and the Environment, pp. 307-328. CRC Press, ISBN 9781482257298 - CAT# K24089. DOI: 10.1201/b18124-13.
2. **S. Ilyas,** J.-c. Lee (2015), Hybrid Leaching: An Emerging Trend in Bioprocessing of Secondary Resources, In: Microbiology for Minerals, Metals, Materials and the Environment, pp. 359-382, CRC Press, ISBN 9781482257298 - CAT# K24089. DOI: 10.1201/b18124-15.
3. **S. Ilyas,** M.A. Hanif (2015), Column and ion exchange chromatography. In: Chromatography. Editors, M.A. Hanif and H.N. Bhatti, International Scientific Organization. ISBN 978-969-23074-0-6.
4. H.N. Bhatti, **S. Ilyas** (2015), Organometallics. In: Advanced Organic Chemistry (for BS and M.Sc. students). Editor, H.N. Bhatti, Caravan Book House Lahore, Pakistan.
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Scientific societies/activities

1. Member of the Biochemical Society, UK.
2. Life member of The Chemical Society of Pakistan.
3. Life member of Korean Society of Metal, South Korea.
4. Life member of Korean Resource Recycling Society, South Korea.
5. Focal person of gender equity committee, United State-Pakistan Center for Advanced Studies in Agriculture and Food Security (USPCAS-APS) for UAF and UC Davis.
6. Member of project screening and evaluation committee (biotechnology) of U.S.-Pakistan centers for advance studies, UAF, Pakistan.