RESUME

Dr. Ritwik Sarkar

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Profile

Qualification	: PhD in Engineering – 2003. M. Tech in Ceramic Engineering. – 1995. B.Tech in Ceramic Technology – 1993. P. G. Diploma in Operations Management.
Experience	: 25 years on Ceramics and Refractory (Industry, R & D and Academics).
Administrative Position	: 1) **Dean**, Sponsored Research, Industrial Consultancy and Continuing Education (**SRICCE**), NIT-Rourkela. (Jul 2019 – Jun 2021) ***2)*** **Head,** Centralized Instrumentation facility (**CIF**), NIT-Rourkela. (Jul 2018 – Jun 2019) 3) **Head,** Ceramic Engineering Dept, NIT-Rourkela (Jul 2017 – Jun 2019) 4) **Warden**, S. D. hall of Residence, NIT-Rourkela (Jul 2012 – Jun 2015)
Foreign Exposure	: Institute of Ceramic Components for Mechanical Engg., Technical University (RWTH - Aachen), Aachen, Germany, 2003 – 04, with DAAD fellowship.
Publication	: Book (Refractory Technology, CRC Press, US (Ed. 2016, 2023) - 01 Book Chapter (IOM Communication 2001) - 01
Research publications	: Total in number - >200 Journals with Science Citation Index (SCI) - 95 Journal (Non SCI) - 35 Proceedings / Presented - International / National Seminars - 64 Poster Paper - 10
Patents	: Total in number - 11 Granted - 8 Published - 3
Keynote Speech	: - 02
Invited Lecture/Talk	: - 17
PhD Supervision	: Degree Awarded - 98 Current PhD students Continuing - 5
Academic Courses	: Refractory Technology, Advanced Refractories, Unshaped Refractory, Refractory laboratory, Whiteware technology, Whiteware laboratory, Advanced structural Ceramics, Bioceramics
Professional Membership	: Fellow, Indian Institute of Ceramics. Life Member of Indian Ceramic Society. (EL 401)

Honors, Awards and Achievements : 1) Appeared in Top 2% Scientists of the World, for consecutive 4 years, prepared by Stanford University, US.

2) ***Ganpule Award for Whitewares*** – 2012 from Indian Ceramic Soc.

3) ***Deokaran Award for Refractories*** – 2011 from Indian Ceramic Soc.

4) Received ***Best Poster paper*** Award in 7th IREFCON, Kolkata, 2008 and 5th IREFCON, Bhubaneswar, 2002.

5) Received ***R. L. Thakur Memorial Award (Young Scientists*** *under* 35 *years of age) of The Indian Ceramic Society in 2005.*

6) Received ***DAAD*** *(German Academic Exchange Service)* ***Fellowship*** in 2003 and became ***Top*** in the Merit ***List of CSIR-DAAD fellows***.

7) Obtained ***Senior Research Fellowship Award*** – CSIR, during 1995 – 99.

8) Received ***Jawaharlal Nehru Memorial Fund's Award*** in 1995 for A*cademic Excellence*.

9) Received ***GOLD MEDAL*** *in* M. Tech. (1995), *Banaras Hindu Univ*.

10) Received ***Proficiency Certificate*** from ***Indian* Refractory *Makers Association & All India Pottery Manufacturers Association*** *in 1993.*

11) ***First Class First*** *in* B. Sc. (Tech) - *Ceramic in 1993, Calcutta Univ*.

12) Received ***National Merit Certificate*** in 1989.

Professional Activity *: *Member, Research Advisory Committee (RAC), Dalmia Institute of Scientific & Industrial Research, Rajgangpur, Odisha. (Since 2020)*

** Academic Committee Member, International Postgraduates Seminar on Refractories (Online), Wuhan Univ. of Science & Tech, China. (2023, 2024)*

** Member, Ceramicware Sectional Committee, CHD 9, Bureau of Indian Standards, India.(2021 - 23)*

** Keynote Speaker, 64th Refractory Operating Committee Meeting, Rourkela Steel Plant, 18-19th Dec 2019, Rourkela, Odisha.*

** Editorial Board Member, Transaction of Indian Ceramic Society (2018-20)*

** Keynote Speaker in Advanced Refractory Symposium of 11th International Conference on High Performance Ceramic (CICC), Kunming, May 2019.*

** Chairman, Conference on Industrial Advancements in Ceramics (MRITTIKA 2019), 6-7 April 2019, NIT Rourkela.*

** Council Member - Indian Institute of Ceramics (2019-20, 2015-16, 2007-08)*

** Council Member of Indian Ceramic Society (2019-20, 2013-14, 2011-12)*

** Member, Examination Committee and Publication Committee, Indian Institute of Ceramics 2013-20.*

Personal Information

Date of Birth : 31st January 1972.
Religion : Hinduism
Languages Known : English, Hindi and Bengali & German (little).

Present / Contact Address *: **FR-22, NIT Campus,***
National Institute of Technology,
Rourkela – 769 008, Odisha, India.

Date : Signature

Details of Professional Experience

Name of Organization	*Position held*	*Period*	*Nature of Assignments*
National Institute of Technology, Rourkela	Professor Associate Professor	Since Feb 2018 Jul'09 – Jan'18	Academic activity Research work mainly on Refractories and Bioceramics
IFGL Refractories Ltd., Kalunga, Orissa	General Manager – Tech. Development	14 months (2008-2009)	Developmental work on Refractories & Bioceramic
Central Glass & Ceramic Research Institute, Kolkata	Scientist	7 Yrs (2001 - 2008)	Industrial & applied research on Refractories, Clays & Solid Waste
Inst. for Ceramic Components in Mech. Eng, (IKKM), RWTH-Aachen, GERMANY	Scientific Co-worker (Wissenschaftlische Mitarbeiter). DAAD	16 months (2003-2004) (Deputation)	Applied & Basic Research on Continuous Casting Refractories and Slip Cast Refractories
Research & Consultancy Directorate (Refractoories), A. C. C. Ltd., Thane.	Asst. Manager-Research	15 Months (1999-2001)	Applied Research on Refractories, Technology Development & implementation at plant.
Central Glass & ceramic Research Institute, Kolkata	Senior Research Fellow	~ 4 Yrs (1995-1999)	Basic Research, Publication & Patent generation
H & R Johnson (I) Ltd.	Management Trainee	~ 4 Months	Tiles Production training

Details of Educational Qualification

Degree	*University*	*Year*	*Rank*
Ph. D. (Engineering)	Jadabpur University	2003	Awarded
M. Tech. (Ceramic Engg.)	Banaras Hindu University	1995	1st Class 1st
B.Sc. Tech. (Ceramic)	University of Calcutta	1993	1st Class 1st
PG Dip in Operation Management	Indira Gandhi National Open University	1998	--
Dip. in Quality Control Management	Indian School of Labor Education	1999	--

Details of PhD Guided (Awarded)

Student Name	*Thesis Title*	*Year*
Biswajit Baruah	Effect of rare-earth oxides on the formation, densification and property development of magnesium aluminate spinel prepared from different oxide reactants in a single-stage firing process	2024
Venkatesh Pilli	Nano carbon containing alumina carbon refractories	2022
Rupita Ghosh	Development of calcium phosphate based machinable bio-ceramics	2019
Satyananda Behera	N220 nano-carbon black containing low carbon MgO-C refractory	2018
Akhilesh Kumar Singh	Study on the effect of different sols on high alumina castable refractory	2017
Amit Kumar Yadav (as Co-Supervisor)	Development of granular porous alumina adsorbents using kaolin for the mitigation of excess fluoride ions from aqueous system	2022
Aiswarya Dash (as Co-Supervisor)	Development of SiO_2- CaF_2 based oxyfluoride glass-ceramic for up-conversion study	2022
Pallavi S. Behera (as Co-Supervisor)	Studies on the synthesis and utilization of fine alumina powder for the fabrication of sintered mullite ceramic	2022
Smruti Rekha Dash (as Co-Supervisor)	Effect of fabrication methods on the porosity, microstructure, strength and in-vitro bioactivity of porous HaP scaffolds	2015

Books and Book Chapters

1. Refractory Technology: Fundamentals and Applications, Ritwik Sarkar, CRC Press, Florida
   1st Edition, 2016 - ISBN-13: 978-1498754255, 2016.
   2nd Edition, 2023 - ISBN-13: 978-1032131405, 2023.

2. Advanced Refractories for Iron & Steel Industries, Ritwik Sarkar, CRC Press, Florida, US, ISBN-13: 9781032841922, Expected in 2025.

3. User friendly High Refractory Calcium Aluminate Cement, S. D. Majumdar, R**. Sarkar**, P. P. Vajifdar, S. Narayanan, R. M. Cursetji, and A. K. Chatterjee, Book Chapter in Calcium Aluminate Cements 2001, Edited by, R J Mangabhai and F. P. Glasser, ISBN 1-86125-142-4, IOM Communications Ltd., London, Paper no 34, 2001.

Details of Publications

Journals with Science Citation Index (SCI) [Impact Factor]

1. Effect of attritor milling on the densification of magnesium aluminate spinel, Ritwik Sarkar, Samir Kr. Das & Goutam Banerjee, *Ceramics International*, 25 [5] 485-9 (1999). [DOI : 10.1016/S0272-8842(98)00065-0]

2. Effect of compositional variation and fineness on the densification of $MgO\text{-}Al_2O_3$ compacts, Ritwik Sarkar & Goutam Banerjee, *Journal of European Ceramic Society*, 19, 2893-99 (1999). [DOI:10.1016/S0955-2219(99)00078-3]

3. Spinellisation of magnesium and aluminium hydroxides with pressure and temperature, Ritwik Sarkar & Goutam Banerjee, *Transactions of the Indian Ceramic Society*, 58 [3] 69 - 71 (1999). [DOI : 10.1080/0371750X.1999.10799864]

4. Densification Study of Attritor Milled Magnesium Aluminate Spinel, Ritwik Sarkar & Goutam Banerjee *Transactions of the Indian Ceramic Society* 58 [4] 92-4 and 103 (1999). [DOI : 10.1080/0371750X.1999.10799873]

5. Calcination effect on magnesium hydroxide and aluminium hydroxide for the development of magnesium aluminate spinel, Ritwik Sarkar, Samir Kr. Das & Goutam Banerjee, *Ceramics Int.*, 26 [1] 25-8 (2000). [DOI : 10.1016/S0272-8842(99)00014-0]

6. Magnesium aluminate spinel from single stage sintering, Ritwik Sarkar & Goutam Banerjee, *Science of Sintering*, 32 [2] 61-8 (2000).

7. Effect of addition of TiO_2 on reaction sintered MgO - Al_2O_3 spinels, Ritwik Sarkar and Goutam Banerjee, *Journal of the European Ceramic Society* 20 p 2133-41 (2000). [DOI : 10.1016/S0955-2219(00)00097-2]

8. Single stage densification study of different magnesium aluminates in presence of additives, Ritwik Sarkar and Goutam Banerjee, *Industrial Ceramics* 20 [1] p 1-4 (2000).

9. Effect of addition of Cr_2O_3 on the properties of $MgO\text{-}Al_2O_3$ spinels, Ritwik Sarkar & Goutam Banerjee, *Journal of the European Ceramic Society*, 22 [8] 1243-50 (2002). [DOI : 10.1016/S0955-2219(01)00446-0]

10. Development of forsterite refractories from Indian olivine, Ritwik Sarkar and R. K. Sinha, *Transactions of the Indian Ceramic Society*, 61 [1] 20 – 2 & 5 (2002). [DOI : 10.1080/0371750X.2002.10800012]

11. Olivine - the potential industrial mineral: an overview, Ritwik Sarkar, *Transactions of the Indian Ceramic Society*, 61 [2] 80 – 82 (2002). [DOI : 10.1080/0371750X.2002.10800031]

12. Spinellisation study of three different $MgO\text{-}Al_2O_3$ compositions using a dilatometer, Ritwik Sarkar, G. Banerjee and T. K. Pal, *Transactions of the Indian Ceramic Society*, 61 [4] 173 – 175 (2002). [DOI : 10.1080/0371750X.2002.10800057]

13. Effect of additives on the densification of reaction sintered and presynthesised spinels, Ritwik Sarkar, Samir Kr. Das and Goutam Banerjee, *Ceramics International*, 29 [1] 55-59 (2003). [DOI : 10.1016/S0272-8842(02)00089-5]

14. Effect of alumina reactivity on the densification of reaction sintered nonstoichiometric spinels, Ritwik Sarkar, S. Chaterjee, H. S. Tripathi, M. K. Haldar, S. K. Das & A. Ghosh, *Ceramics International*, 29 [2] 195 – 98 (2003). [DOI : 10.1016/S0272-8842(02)00105-0]

15. Reaction sintered magnesia rich magnesium aluminate spinel: Effect of alumina reactivity, Ritwik Sarkar, Arup Ghosh and Samir Kr Das, *Ceramics International* 29 [4] 407 – 411 (2003). [DOI : 10.1016/S0272-8842(02)00152-9]

16. No cement high alumina self flow castable, Swapan Das, Ritwik Sarkar, Pradip Mondal and Somnath Mukherjee, *American Ceramic Society Bulletin*, 82 [2] 55 – 59 (2003).

17. Effect of spinel content on the properties of magnesia – spinel composite refractory, A. Ghosh, Ritwik Sarkar, B. Mukherjee and S. K. Das, *Journal of the European Ceramic Society, 24, p 2079 – 85 (2004). [DOI : 10.1016/S0955-2219(03)00353-4]*

18. Reaction sintering of magnesium aluminate spinels : effect of $MgSO_4$, Ritwik Sarkar and Goutam Banerjee, *American Ceramic Society Bulletin, (*www.ceramicbulletin.org*) 82 [8] p 9601-9607 (2003)*

19. Reaction sintering of alumina rich magnesium aluminate spinel, Arup Ghosh and Ritwik Sarkar, *American Ceramic Society Bulletin, (*www.ceramicbulletin.org*) 82 [12] p 9501-9506 (2003).*

20. Effect of synthetic aggregates on alumina castable, S. K. das, P. K. Mandal and Ritwik Sarkar, *American Ceramic Society Bulletin, (*www.ceramicbulletin.org*) 82[10] p 9101-9106 (2003).*

21. Fiber reinforced no cement self flow high alumina castable – A study, Ritwik Sarkar, S. K. Das, P. K. Mandal, S. N. Mukherjee, S. Dasgupta and S. K. Das, *Transactions of the Indian Ceramic Society*, 62 [1] 1 – 4 (2003). [DOI : 10.1080/0371750X.2003.11012067]

22. Reaction sintering of different spinel compositions in presence of Y_2O_3, Ritwik Sarkar, H. S. Tripathi and A. Ghosh, *Materials Letter*, 58, p 2186 – 2191 (2004). [DOI : 10.1016/j.matlet.2004.01.015]

23. Shrinkage and strength behavior of quartzitic and kaolinitic clays in wall tile compositions, Swapan Kumar Das, Kausik Dana, Nar singh and Ritwik Sarkar, *Applied Clay Science*, 29 [2] 137 – 43 (2005). [DOI : 10.1016/j.clay.2004.10.002]

24. Effect of synthetic mullite aggregate prepared by hydroxyl-hydro gel method on sol bonded clay based mullite castable, T. K. Mukhopadhyay, Ritwik Sarkar, S. K. Das, S. Ghosh and S. Ghatak, *American Ceramic Society Bulletin (*www.ceramicbulletin.org*) 84 [11] p 9101-9106 (2005).*

25. Phase and microstructure evolution during hydrothermal solidification of clay quartz mixture with marble dust source of reactive lime, Ritwik Sarkar, Swapan Kumar Das, Pradip Kumar Mandal and Himadri Shekhar Maiti, *Journal of the European Ceramic Society*, 26 [3] 297 - 304 (2006). [DOI : 10.1016/j.jeurceramsoc.2004.11.006]

26. Effect of lanthanum oxide on reaction sintering of zirconia-mullite composites, Ritwik Sarkar, A. Ghosh, M. K. Halder, B. Mukherjee and S. K. Das, *American Ceramic Society Bulletin (*www.ceramicbulletin.org*) 85 [1] p 9201-9208 (2006).*

27. Hydro-thermal treatment of $CaO - SiO_2 - Al_2O_3 - H_2O$ system, Ritwik Sarkar & Swapan Kumar Das, *American Ceramic Society Bulletin (*www.ceramicbulletin.org*) 85 [3] p 9201-9213(2006).*

28. Gel bonded $Al_2O_3 - SiC - C$ based blast furnace trough castable, Ritwik Sarkar, Somnath Mukherjee & Arup Ghosh, *American Ceramic Society Bulletin (*www.ceramicbulletin.org*) 85 [5] p 9101-9105 (2006).*

29. Effect of addition of pond ash and fly ash on clay for the development of ash - clay burnt brick, Ritwik Sarkar, Nar Singh and Swapan Kumar Das, *Waste Management & Research*, 25, p 566-571 (2007). [10.1177/0734242X07080114]

30. Waste silica from aluminium fluoride industries used for ceramic whiteware, Ritwik Sarkar, Syamal Ghosh and Swapan Kumar Das, *American Ceramic Society Bulletin, (*www.ceramicbulletin.org*) 86 [10] 9201-9205 (2007).*

31. Effect of AlF_3 on Spinel formation, Ritwik Sarkar, Somnath Mukherjee and Arup Ghosh, *Industrial Ceramics* 28 [1] 33 – 36 (2008).

32. Development of an acid resistant porous pot using rice husk ash waste, Ritwik Sarkar, Mihir Kumar Das and Swapan Kumar Das, *Industrial Ceramics* 28 [2] p 139 – 144 (2008).

33. Effect of addition of titania doped preformed spinel in high alumina castables, Ritwik Sarkar, Manas Kamal Haldar, Somnath Mukherjee, Gopal Debnath, Arup Ghosh, Tra*nsaction of Indian Ceramic Society,* 68 [3] 145 – 50 (2009). [10.1080/0371750X.2009.11082168]

34. Utilization of steel melting electric arc furnace slag for development of vitreous ceramic tiles, Ritwik Sarkar, Nar Singh and Swapan Kumar Das, *Bulletin of Materials Science*, 33 [3] 293-98 (2010). [DOI : 10.1007/s12034-010-0045-5]

35. Effect of different mullite precursors on the properties of low cement high alumina castable, Bidhan Mandal, Ritwik Sarkar and Pranab K. Daspoddar, *Industrial Ceramics*, 31 [3] 217-222 (2011).

36. Study on low carbon containing MgO-C refractory: use of nano carbon, Mousom Bag, Sukumar Adak and Ritwik Sarkar, *Ceramics International*, 38 (3) 2339–2346 (2012). [DOI : 10.1016/j.ceramint.2011.10.086]

37. Nano carbon containing MgO-C refractory: effect of graphite content, Mousom Bag, Sukumar Adak and Ritwik Sarkar, *Ceramics International* 38 (6) 4909 -14 (2012). [DOI : 10.1016/j.ceramint.2012.02.082]

38. Development of aventurine glaze for ceramic tiles from red mud waste, Kausik Dana, Swapan Kumar Das and Ritwik Sarkar, CFI-Ceramic Forum International, 90, p E55-E57, (2013).

39. Effect of lanthanum phosphate addition on machinability of tri-calcium phosphate based bioceramics, Ritwik Sarkar, Sumit K Pal and Rupita Ghosh, Ceramic Forum International, 91 [3-4] p E57-E62 (2014).

40. Effect of binders and distribution coefficient on the properties of high alumina castables, Akhilesh. K. Singh and Ritwik Sarkar, Journal of the Australian Ceramics Society, 50[2] 93 – 98 (2014).

41. Auto combustion synthesis for magnesium aluminate spinel using glycine as fuel and its sintering study, Ritwik Sarkar and Swagatika Das, Transactions of the Indian Ceramic Society, 73 [2] 172-176 (2014). [10.1080/0371750X.2014.922436]

42. Lanthanum Phosphate Containing Machinable Alumina Ceramics for Bio-Medical Applications, Abhishek Badolia, Ritwik Sarkar and S. K. Pal, Transactions of the Indian Ceramic Society, 73 [2] 115-120 (2014). [10.1080/0371750X.2014.922425]

43. Study on the Development of Machinable Hydroxyapatite - Yttrium Phosphate Composite for Biomedical Applications, Rupita Ghosh, Sumit Pal, Ritwik Sarkar, Transactions of the Indian Ceramic Society, 73[2] 121-125 (2014). [10.1080/0371750X.2014.922426]

44. Effect of raw materials on formation and densification of magnesium aluminate spinel, Ritwik Sarkar and Sachin Sahoo, Ceramics International, 40 [10B] 16719–16725 (2014). [10.1016/j.ceramint.2014.08.037]

45. Effect of Alumina Addition on 45S5 Bioglass, Pinki Dey, Sumit Kumar Pal and Ritwik Sarkar, Transactions of the Indian Ceramic Society, 73 [2[105-109 (2014). [10.1080/0371750X.2014.922423]

46. Low carbon Magnesia-Carbon Refractory: use of N220 nano carbon black, Satyananda Behera and Ritwik Sarkar, International Journal of Applied Ceramic Technology, 11 [6] 968–976 (2014). [10.1111/ijac.12324]

47. Reactive Alumina-$LaPO_4$ Composite as Machinable Bioceramics, Abhishek Badolia, Ritwik Sarkar and Sumit Kumar Pal, Bulletin of Materials Science, 38 [4] 975-983 (2015). [10.1007/s12034-015-0955-3]

48. Sintering of magnesia : Effect of additives, Satyananda Behera and Ritwik Sarkar, Bulletin of Materials Science, 38 [6] 1499 – 1505 (2015). [10.1007/s12034-015-0962-4]

49. Synthesis and Characterization of Alumina Sol and Its Use as Binder in No Cement High Alumina Refractory Castables, Akhilesh Kumar Singh and Ritwik Sarkar, International Journal of Applied Ceramic Technology, 12 [S3] E54 – E60 (2015). [10.1111/ijac.12368]

50. High Alumina Castables: Effect of alumina sols and distribution coefficients, Akhilesh K. Singh and Ritwik Sarkar, Transactions of the Indian Ceramic Society, 74 [4] 225-231 (2015). [10.1080/0371750X.2015.1098566]

51. Effect of spinel content on the properties of Al_2O_3-SiC-C based trough castable, Venkatesh Pilli and Ritwik Sarkar, Ceramic International, 42 [2B] 2969–2982 (2016). [10.1016/j.ceramint.2015.10.081]

52. Study on the formation and densification of magnesium aluminate spinel using commercial grade reactants: effect of planetary milling, Sanjay Krishna Mohan and Ritwik Sarkar, Journal of the Australian Ceramic Society, 52 [1] 138 – 147 (2016).

53. Alumina Based Machinable Bioceramic: Addition of YPO_4, Abhishek Badolia and Ritwik Sarkar, Ceramic Forum International, 93 [3] E39 – E 47 (2016).

54. Study on the variation of graphite content in N220 nano carbon containing low carbon MgO-C refractory, Satyananda Behera and Ritwik Sarkar, Ironmaking and Steelmaking, 43 [2] 130-136 (2016). [10.1179/1743281215Y.0000000057]

55. Nano carbon containing low carbon magnesia carbon refractory: an overview, Satyananda Behera and Ritwik Sarkar, Protection of Metals and Physical Chemistry of Surfaces, 52 [3] 467–474 (2016). [10.1134/S2070205116030059]

56. Biocompatibility and Drilling Performance of Beta Tricalcium phosphate : Yttrium Phosphate Bioceramic Composite, Rupita Ghosh, Ritwik Sarkar, Soumitra Paul, Sumit K. Pal, Ceramic International, 42[7] 8263-8273 (2016). [10.1016/j.ceramint.2016.02.039]

57. Effect of ZrO_2 Addition on $MgAl_2O_4$ Spinel from Commercial Grade Oxide reactants, Sanjay Krishna Mohan and Ritwik Sarkar, Ceramics International, 42 [8] 10355–10365 (2016). [10.1016/j.ceramint.2016.03.167]

58. Synthesis and Characterization of Sintered Beta Tricalcium Phosphate: A Comparative Study on the Effect of Preparation Route, Rupita Ghosh and Ritwik Sarkar, Materials Science and Engineering C, 67 (2016) 345–352. [10.1016/j.msec.2016.05.029]

59. Development of Machinable Hydroxyapatite- Lanthanum Phosphate Composite for Biomedical Applications, Rupita Ghosh, Ritwik Sarkar, Soumitra Paul, Materials and design, 106 (2016) 161–169. [10.1016/j.matdes.2016.05.104]

60. Nano mullite bonded refractory castable composition for high temperature applications, Akhilesh K. Singh and Ritwik Sarkar, Ceramics International, 42 [11] 12937–12945 (2016). [10.1016/j.ceramint.2016.05.066]

61. A comparative study on the effect of different additives on the formation and densification of magnesium aluminate spinel, Sanjay Krishna Mohan and Ritwik Sarkar, Ceramics International, 42 [12] 13932-13943 (2016). [10.1016/j.ceramint.2016.05.206]

62. Effect of insitu generated nascent magnesia and alumina from nitrate precursor on reaction sintered magnesium aluminate spinel, Sanjay Krishna Mohan and Ritwik Sarkar, Materials and Design, 110, 145–156 (2016). [10.1016/j.matdes.2016.07.095].

63. Development of spinel sol bonded high pure alumina castable, Akhilesh K Singh and Ritwik Sarkar, Ceramics International. 42 [15] 17410–17419 (2016). {DOI : https://doi.org/10.1016/j.ceramint.2016.08.041].

64. A comparative study on bonding systems in alumina-silicon carbide-carbon-based trough castable, Venkatesh Pilli and Ritwik Sarkar, Ironmaking and steelmaking, 43 [9] 705 - 711 (2016). [10.1080/03019233.2016.1142721]

65. Effect of different metal powder anti-oxidants on N220 nano carbon contains low carbon MgO-C refractory, Satyananda Behera and Ritwik Sarkar, Ceramic International, 42 [16] 18484 – 18494 (2016). [10.1016/j.ceramint.2016.08.185]

66. Reaction sintered zinc oxide incorporated magnesium aluminate spinel from commercial grade oxide reactants, Sanjay Krishna Mohan and Ritwik Sarkar, Journal of the Australian Ceramic Society, 53 [1] 207–216 (2017). [10.1007/s41779-017-0026-x].

67. Hydroxyapatite based machinable bioceramic: an in depth investigation on drilling parameters and bioactivity, Rupita Ghosh, Ritwik Sarkar, Soumitra Paul, Journal of Alloys and Compounds, 723 [5] 43–49 (2017). [10.1016/j.jallcom.2017.06.191]

68. Sintered porous balls from rice husk for thermal insulation in iron and steel industries, Ritwik Sarkar and Megha Acharya, Ironmaking and steelmaking : Processes, Products and Applications, 44 [9] 649-655 (2017). [10.1080/03019233.2016.1226565]

69. Formation of Mg_2C_3 in N220 Nanocarbon containing Low Carbon MgO-C Composition, Satyananda Behera and Ritwik Sarkar, Bulletin of Materials Science, 40 [5] 939–943 (2017). [10.1007/s12034-017-1429-6]

70. High alumina castables: a comparison among various sol-gel bonding systems, Akhilesh K Singh and Ritwik Sarkar, Journal of the Australian Ceramic Society, 53 [2] pp 553–567 (2017). [10.1007/s41779-017-0067-1]

71. Effect of citrate to nitrate ratio on the sol-gel synthesis of nanosized α-Al_2O_3 powder, Pallavi Suhasinee Behera, Sunipa Bhattacharyya, Ritwik Sarkar, Ceramics International, 43 [17] 15221-15226 (2017). [10.1016/j.ceramint.2017.08.057]

72. Synthesis and characterization of sintered Hydroxyapatite: A comparative study on the effect of preparation route, Rupita Ghosh, Ritwik Sarkar, Journal of the Australian Ceramic Society, 54 [1] 71–80 (2018). [10.1007/s41779-017-0128-5

73. Formation and densification of mullite through solid oxide reaction technique using commercial grade raw materials, Ritwik Sarkar and Manish Mallick, Bulletin of Materials Science, 41 [1] 31-38 (2018). [DOI: 10.1007/s12034-017-1533-7]

74. Nanocarbon containing Al_2O_3 – C continuous casting refractories: effect of graphite content, Venkatesh Pilli and Ritwik Sarkar, Journal of Alloys and Compounds, 735, 1730 – 36 (2018). [DOI: 10.1016 /j. jallcom. 2017.11.324

75. Urea based sols as binder for Nano-oxide bonded high alumina refractory castables, Akhilesh Kr. Singh and Ritwik Sarkar, Journal of Alloys and Compounds, 758 (2018) 140 – 147. [DOI: 10.1016 /j.jallcom. 2018.05.095]

76. Study on the nanocarbon containing Al_2O_3 – C continuous casting refractories with reduced fixed carbon content, Venkatesh Pilli and Ritwik Sarkar, Journal of Alloys and Compounds 781 (2019) 149 - 158. [DOI: 10.1016/j.jallcom.2018.12.002]

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61. Microstructures and properties of low cement high alumina based refractory castable: Effect of Y_2O_3 content, Satyam Kumar, Achint Sarbajeet Bishoyi, Ritwik Sarkar, International conference on Exploring the Emerging World of Ceramics and Glass (ICEECG 2023) at 87th Annual Session of Indian Ceramic Society, 19th – 21st December 2023, CG & CRI, Kolkata.

62. Effect of rare earth oxide addition on the properties of in-situ MgAl2O4 castable, Satyam Kumar, Jiban Pattanaik and Ritwik Sarkar, Presented at the 2nd International Conference on Refractories in Iron and Steel Industries, 12th to 13th April 2024, Bokaro, India.

63. Effect of rare-earth oxides addition on the properties of alumina magnesia refractory castable, Satyam Kumar, Jiban Pattanaik and Ritwik Sarkar, Presented at 7th Int. Postgraduate Seminar on Refractories (online), 6th to 7th June 2024, Wuhan, China.

64. Effect of alumina dispersant and fume silica on microstructure and properties of alumina spinel castable for steel ladle application, Satyam Kumar and Ritwik Sarkar, Presented at the National seminar on Industrial Ceramics : Challenges, Opportunities and Sustainability (ICCOS), 13th to 14th June 2024, Kolkata.

Keynote Speech

1. Mullite and spinel sols as binder for high alumina refractory castable, 11th International conference on High Performance Ceramics (CICC-2019), Symposium I – Advanced Refractories, May 25-29, 2019, Kunming, China.

2. Lime kiln refractories : an overview, 64th Refractory Operating Committee Meeting, Rourkela Steel Plant, 18-19th Dec 2019, Rourkela, Odisha

Invited Talk / Lecture

1. "Industrial Kilns and Furnaces", delivered at the seminar on 'Ash clay burnt brick and MOEF notification on use of coal ash' organized by Coal Ash Institute of India, 29th March 2003, CESC-Taratala, Kolkata.

2. "Development & manufacture of ZrO_2 - C based sub-entry nozzle", delivered on 16th March 2004 at Institute of Ceramic Components for Mechanical Engg. (IKKM), Technical University, (RWTH), Aachen, Germany.

3. "Furnaces for Ceramic Industry", delivered in Jagriti 2005, seminar on the Reunion of Alumnis of College of Ceramic Technology, Kolkata 2005.

4. "Utilization of fly ash : a futuristic view"', delivered in one day seminar on 'Fly ash utilization – perspectives and prospects' on 11th November 2006, at Govt. College of Engineering & Ceramic Technology, Kolkata.

5. "Recycling of Refractories : Iron & Steel Industry", delivered in 'National Conference on Prospect of Refractories in the next Decade, PRND – 08", at NIT-Rourkela, during 7th to 9th November 2008.

6. "Introduction to Ceramics", delivered in "Workshop on Fundamentals in Ceramic Science", organized by Indian Ceramic Society, 4-5th September, 2013, Kolkata.

7. "Particle size distribution and distribution coefficient of castables", delivered in the National Seminar on Advances in Refractory Raw Materials and Monolithics" (ARMM 2013), 12-13, November, 2013, Kolkata.

8. "Basics of spinel refractory", delivered at Refractory Technology Group, Tata Steel, Jamshedpur, on 20th March 2014.

9. "Magnesium Aluminate Spinel: A Synthetic Refractory Raw Material", National Workshop on Basic Refractory for Metallurgical Industries: Perspective of Indian Raw Materials" on 20th March 2015 at CSIR-CGCRI, Kolkata.

10. "Utilization of fly ash : a futuristic view", Delivered at O. P. Jindal University (OPJU), Raigarh (CG) on 13th October 2015.

11. "Spinel containing alumina-silicon carbide-carbon based trough castable : a study", 2nd National Seminar on Advances in Refractory Raw Materials and Monolithics" (ARMM 2015), 19th November, 2015, Kolkata.

12. Refractory Corrosion : The Process, Testing Methods and Some Remedies, International Symposium on Industrial Applications of Refractory : Problems and Solutions, Reliance Corporate Park, Mumbai, 10th August 2018.

13. Nanotechnology in Refractory Castables — An Overview, Short Term Training Programme (STTP) on Synthesis, Processing, and Characterization of Advanced Materials 2019 (SPCAM 2019), VSSUT, Burla, Sambalpur, Odisha, 11th April 2019.

14. A Deep Insight to Corrosion of Refravtory, Invited Speech at Wuhan University of Science and Technology, 23rd May 2019, Wuhan, China.

15. Introduction to refractory castable and application of nanotechnology, Invited Speech at Wuhan University of Science and Technology, 23rd May 2019, Wuhan, China.

16. Low Carbon containing Alumina-Carbon Refractories: Effect of Nano-carbon Content, Annual Day of Indian Ceramic Society, Jamshedpur Chapter, 16th July 2021 (Online).

17. Refractoy castable and nano-technology, at the International Conference on Exploring the Emerging World of Ceramics and Glass (ICEECG 2023) at 87th Annual Session of Indian Ceramic Society, 19th – 21st December 2023, CG & CRI, Kolkata.

Poster Paper

1. "Development of non-stoichiometric spinels by reaction sintering : Effect of reactivity of alumina", A. Ghosh, **R. Sarkar,** H. S. Tripathi, M. K. Haldar, B. D. Mukherjee and S. K Das, Poster Session of the 5th India International Refractory Congress, IREFCON-02, Bhubaneswar (2002).
   AWARDED as the BEST POSTER PAPER.

2. "Effect of ZrO_2 on the sintering behavior of co-precipitated MgO-Al_2O_3 precursor powder", K. Dana, **R. Sarkar**, S. K. Das and N. K. Mitra, Poster Session of Silver Jubilee Celebration of the Indian Ceramic Society, Bangalore Chapter, 20th April, 2002, Bangalore.

3. "Fibre reinforced no cement self flow high alumina castable – A study : **Ritwik Sarkar**, S. K. Das, P. K. Mandal, S. N. Mukherjee, S. Dasgupta and S. K. Das, 66th Annual Session of the Indian Ceramic Society, Science city, Kolkata, 7 – 9 Dec 2002.

4. "Development of singular clay from various underutilized clay sources of West Bengal", **Ritwik Sarkar**, N. Singh, T. K. Mukhopadhyay and S. K. Das, Presented in the 70th Annual Session of Indian Ceramic Society, page , January 8- 10, 2007, Vishakhapatnam, I*ndia.*

5. "Refractory Pot For Melting High Density Corrosive Glasses", Ritwik Sarkar, Surajit Gupta, Tapas Kumar Mukhopadhyay and Swapan Kumar Das, 7th India International Refractory Congress (IREFCON 08) Kolkata, 7th to 9th February 2008.
   AWARDED as the BEST POSTER PAPER.

6. "Recent developments in no cement high alumina self flow castable at CGCRI", Ritwik Sarkar, Pradip Kumar Mandal and Swapan Kumara Das, International conference on 'High tech aluminas and unfolding their business prospects' (ALUMINAS 2008), Feb 28 to Mar 01, 2008, Kolkata.

7. "Effect of ZrO_2 Addition on $MgAl_2O_4$ from Commercial Grade Oxides by Solid Oxide Reaction", Sanjay K Mohan and Ritwik Sarkar, 27th Annual General Meeting of Materials Research Society of India, CSIR - NEIST, Jorhat, 18-20 February 2016.

8. Reaction Sintered MgO-rich Magnesium Aluminate Spinel: Effect of Rare-earth Oxide Additives, Biswajit Baruah, Sidhanta Parija and Ritwik Sarkar, Poster presented at Mrittika 2.0- A national conference on present scenario and future trend in ceramic and allied industries, April-6th – 8th, 2023, Department of Ceramic Engineering, NIT Rourkela.

9. Effect of alumina dispersant on the properties of preformed alumina spinel castable, Satyam Kumar and Ritwik Sarkar, Poster presented at Mrittika 2.0- A national conference on present scenario and future trend in ceramic and allied industries, April-6th – 8th, 203, Department of Ceramic Engineering, NIT Rourkela.

10. In-situ spinel containing alumina castable: Role of dispersing Alumina, Satyam Kumar a and Ritwik Sarkar, Presented at the 8th International Conference On Refractories, Jamshedpur (ICRJ 2024), 14-15 March 2024, Jamshedpur, India.

Details of Patents

Granted

1) A synergistic composition for the manufacture of improved basic composite refractory and a process for the manufacture of improved basic composite refractory therefrom,
   Patent filed in India, **Patent No. 228363**, Date of Sealing 03.02.2009.
   Inventors : Inventors : **Ritwik Sarkar**, Arup Ghosh, Barundeb Mukherjee and Samir Kumar Das

2) A magnesia based basic refractory castable having improved characteristics and the process of preparation thereof,
   Patent filed in India, **Patent No. 226073**, Date of Sealing 07.12.2008.
   Inventors : Swapan Kumar Das, **Ritwik Sarkar**, Pradip Kumar Mandal.

3) A Process for the Production of Porous Ceramic Tiles Using Marble Dust.
   Patent filed in India, **Patent Number 228233**, Date of sealing 29.01.2009.
   Inventors : **Ritwik Sarkar**, Swapan Kumar Das, Pradip Kumar Mandal and Himadri Sekhar Maiti.

4) A process for the production of high strength porous ceramic tiles utilizing industrial solid wastes,
   Patent filed in India, **Patent Number 227000**, Date of sealing 31.12.2008.
   Inventors : **Ritwik Sarkar** and Swapan Kumar Das.

5) A composition of making light weight ceramic article and a process of making the same.
   Patent filed in India, **Patent Number 255285**, dated 09.02.2013
   Inventors : H. S. Maiti, T. K. Mukhopadhyay, S. K. Das, **Ritwik Sarkar**, K. Dana and S. Ghatak

6) Machinable tricalcium phosphate- lanthanum phosphate bioceramic composite for biomedical application,
   Patent filed in India, **Patent No. : 467026, Date of Grant : 08.11.2023**
   Inventors : Rupita Ghosh and **Ritwik Sarkar**

7) Granule-shaped gamma-alumina adsorbents for the mitigation of excess fluoride ions from groundwater,
   Patent filed in India, **Patent No. : 466660, Date of Grant : 07.11.2023**.
   Inventors : Amit Kumar Yadav, Sunipa Bhattacharyya and **Ritwik Sarkar**

8) Anti-oxidants in low carbon MgO-C refractory.
   Patent filed in India, **Patent No. : 508789, Date of Grant : 08.02.2024**
   Inventors : Satyananda Behera and **Ritwik Sarkar**.

Published

1. A Process For The Production Of Titania Doped Stoichiometric Magnesium Aluminate Spinel Useful As Refractory Aggregates.
   Patent filed in India, Patent Number 782/DEL/2005, (Publication date 19.06.2009)
   Inventors : R K Galgali, P S Mukherjee, L Gumaste, V N Misra, H S Maiti, B D Mukherjee, **Ritwik Sarkar** and A Ghosh.

2. A composition for making vitreous ceramic products, a process of making vitreous ceramic products from the said composition and vitreous ceramic products made thereof.
   Patent filed in India, No. 781/DEL/2008, dated 26th March 2008. (Publication Date 31.08.2016)
   Inventors : **Ritwik Sarkar,** Swapan Kumar Das, Nar Singh and Syamal Ghosh.

3. Mulllte bonded high alumina castable using mulllte precursor sol.
   Patent filed in India, Application No. 1321/KOL/2015, dated 22. 12.2015, published on 23.06.2017
   Inventors : Akhilesh Kumar Singh and **Ritwik Sarkar**.

Sponsored Research and Consultancy Projects

A) Principal Investigator:

Project Title : Development of gradient refractory : A new approach to refractory lining
Duration : Dec 2023 to Dec 2026 Sponsored by : CSIR, GOI
Project Value : Rs. 19,00,000/-

Project Title : Use of Nano carbon black in the development of low C containing alumina-carbon refractories
Duration : July 2018 to July 2021. Sponsored by : CSIR, GOI
Project Value : Rs. 15,30,000/-

Project Title : Development of nano carbon containing magnesia carbon refractories
Duration : Sept'2012 to Sept 2015. Sponsored by : TDT, DST, GOI
Industrial Partner : M/s TRL Krosaki Refractories Ltd.,
Project Value : Rs. 92,36,700/-
Co-investigator: Dr. D. Sarkar

Project Title : Development of calcium phosphate based machinable bioceramics
Duration : Feb'2012 to July 2015. Sponsored by : SERB, DST, GOI
Project Value : Rs. 23,63,685/-
Co-investigator: Dr. S. K. Pal

Project Title : Technology Development to Manufacture Vitrified Ceramic Tiles utilizing EAF Slag
Duration : Jul 2007–Apr 2008 Sponsored by : M/s Essar Steel Ltd., Hazira, Gujarat
Project Value : Rs. 6,35,000/-
Co-investigator: Dr. S. K. Das & Mr N. Singh

Project Title : Developmental study and failure analysis of glass melting refractory pots
Duration : Apr 2005 - Mar 2006 Sponsored by : CSIR : CGCRI, Kolkata
Project Value : Rs. 50,000/-
Co-investigator: Dr. S. K. Das & Mr S. Gupta

Project Title : Development of porous tiles, new building materials, using marble dust as source of reactive lime using hydrothermal treatment
Duration : Apr 2002 – Mar 2007 Sponsored by : Part of 'Network Project, of CSIR, GOI.
Project Value : Rs. 30,00,000/-
Co-investigator: Dr. S. K. Das Mr P. K. Mandal & Mr S. Chakraborty.

B) Co- Principal Investigator / Team Member

Project Title : Development of Low-Carbon Steel Plant Refractories with non-oxide Ceramic Additives
Duration : Apr 2012 to Mar 2015. Sponsored by : TDT, DST, GOI
Industrial Partner : M/s TRL Krosaki Refractories Ltd.,
Project Value : Rs. 101,00,000/-
Principal investigator: Dr. D. Sarkar

Project Title : Development of singular clay from various sources of West Bengal by blending process
Duration : 2 years (Apr 2006 - Mar 2008) Sponsored by : Department of Science & Tech., WB.
Project Value : Rs. 4,60,000/-
Co-investigator: Mr T. K. Mukhejee & Dr. S. K. Das

Project Title : Manufacture of improved quality glass melting refractory pot, crucible and sagger
Duration : Yearly project since 2006 Sponsored by : CSIR : CGCRI, Kolkata
Project Value : Rs. 3,00,000/- per year
Co-investigator: Mr S. Gupta & Dr. S. K. Das

Project Title : Developmental study on thermal plasma processing of spinel and lime aggregates
Duration : Apr 2002 – Mar 2007 Sponsored by : Part of 'Network Project, of CSIR, GOI.
Project Value : Rs. 3,00,00,000/-
Co-investigator: Dr A. Ghosh, Dr B. Mukherje, Dr H. S. Maiti, Dr P. Mukherjee, Dr R. Galgali, Dr L. Gumaste

Project Title : Improvement of ZrO_2 – C sub entry nozzle(SEN), Carried out : IKKM, RWTH-Aachen, Germany
Duration : Oct 2003 – Sept 2004 Sponsored by : IFGL Refractories Ltd, India.
Project Value : USD 5000
Co-investigator: Prof H. R. Maier, Mr. S Baumann

Project Title : Development of wall tile body composition using locally available clays
Duration : Oct 2002 –Sept 2003 Sponsored by : Krishna Silicate & Glass Ltd., West Bengal
Project Value : Rs. 75,000/-
Co-investigator: Dr S. K. Das & Mr P. K. Mandal

Project Title : Up-scaling Technology of Magnesite refractory brick from Nedmag magnesia with magnesium aluminate spinel binder.
Duration : Oct 1998 – Sept 2002 Sponsored by : NEDMAG Industries, BV, Nederlands
Project Value : USD 20000
Co-investigator: Dr. A. Ghosh, Dr. S. K. Das, Dr. G. Banerjee.