

Bibliography

- [1] Best S, Porter A, Thian E and Huang J 2008 Bioceramics: Past, present and for the future *Journal of the European Ceramic Society* **28** 1319-27
- [2] Cacchioli A, Spaggiari B, Ravanetti F, Martini F, Borghetti P and Gabbi C 2006 The critical bone defect: morphological study of bone healing *Annali della facolta di medicina veterinaria. Universita di Parma* **26** 97-110
- [3] Schemitsch E H 2017 Size matters: defining critical in bone defect size! *Journal of orthopaedic trauma* **31** S20-S2
- [4] Srinath P, Abdul Azeem P and Venugopal Reddy K R 2020 Review on calcium silicate-based bioceramics in bone tissue engineering *International Journal of Applied Ceramic Technology* **17** 2450-64
- [5] Zhou H, Lawrence J G and Bhaduri S B 2012 Fabrication aspects of PLA-CaP/PLGA-CaP composites for orthopedic applications: a review *Acta biomaterialia* **8** 1999-2016
- [6] Hsiong S X and Mooney D J 2006 Regeneration of vascularized bone *Periodontology 2000* **41** 109-22
- [7] Henkel J, Woodruff M A, Epari D R, Steck R, Glatt V, Dickinson I C, Choong P F M, Schuetz M A and Hutmacher D W 2013 Bone Regeneration Based on Tissue Engineering Conceptions — A 21st Century Perspective *Bone Research* **1** 216-48
- [8] Saima S, Jan S M, Shah A F, Yousuf A and Batra M 2016 Bone grafts and bone substitutes in dentistry *Journal of Oral Research and Review* **8** 36-8
- [9] Naghiu M, Gorea M, Mutch E, Kristaly F and Tomoaia-Cotisel M 2013 Forsterite nanopowder: structural characterization and biocompatibility evaluation *Journal of Materials Science & Technology* **29** 628-32

- [10] Patel N R and Gohil P P 2012 A review on biomaterials: scope, applications & human anatomy significance *Int. J. Emerg. Technol. Adv. Eng* **2** 91-101
- [11] Lee J B, Park H N, Ko W-K, Bae M S, Heo D N, Yang D H and Kwon I K 2013 Poly (L-lactic acid)/hydroxyapatite nanocylinders as nanofibrous structure for bone tissue engineering scaffolds *Journal of biomedical nanotechnology* **9** 424-9
- [12] Shalumon K, Sowmya S, Sathish D, Chennazhi K, Nair S V and Jayakumar R 2013 Effect of incorporation of nanoscale bioactive glass and hydroxyapatite in PCL/chitosan nanofibers for bone and periodontal tissue engineering *Journal of biomedical nanotechnology* **9** 430-40
- [13] Wang Q, Gu Z, Jamal S, Detamore M S and Berklund C 2013 Hybrid hydroxyapatite nanoparticle colloidal gels are injectable fillers for bone tissue engineering *Tissue Engineering Part A* **19** 2586-93
- [14] Singh P, Yu X, Kumar A and Dubey A K 2022 Recent advances in silicate-based crystalline bioceramics for orthopedic applications: a review *Journal of Materials Science* **57** 13109-51
- [15] Sheikh Z, Najeeb S, Khurshid Z, Verma V, Rashid H and Glogauer M 2015 Biodegradable materials for bone repair and tissue engineering applications *Materials* **8** 5744-94
- [16] Ratner B D, Hoffman A S, Schoen F J and Lemons J E 1996 An introduction to materials in medicine *Biomaterials science* **484**
- [17] Dufrane D, Delloye C, McKay I, De Aza P, De Aza S, Schneider Y-J and Anseau M 2003 Indirect cytotoxicity evaluation of pseudowollastonite *Journal of Materials Science: Materials in Medicine* **14** 33-8
- [18] Schwarz K 1973 A bound form of silicon in glycosaminoglycans and polyuronides *Proceedings of the National Academy of Sciences* **70** 1608-12

- [19] Mohammadi H, Hafezi M, Nezafati N, Heasarki S, Nadernezhad A, Ghazanfari S and Sepantafar M 2014 Bioinorganics in bioactive calcium silicate ceramics for bone tissue repair: bioactivity and biological properties *J. Ceram. Sci. Technol* **5** 1-12
- [20] Wu C and Chang J 2013 A review of bioactive silicate ceramics *Biomedical materials* **8** 032001
- [21] Wu T, Lu T, Shi H, Wang J and Ye J 2023 Enhanced osteogenesis, angiogenesis and inhibited osteoclastogenesis of a calcium phosphate cement incorporated with strontium doped calcium silicate bioceramic *Ceramics International* **49** 6630-45
- [22] Hu C Y and Yoon T-R 2018 Recent updates for biomaterials used in total hip arthroplasty *Biomaterials research* **22** 1-12
- [23] Zhang L, Haddouti E-M, Welle K, Burger C, Wirtz D C, Schildberg F A and Kabir K 2020 The effects of biomaterial implant wear debris on osteoblasts *Frontiers in cell and developmental biology* **8** 352
- [24] Huang Y, Wu C, Zhang X, Chang J and Dai K 2018 Regulation of immune response by bioactive ions released from silicate bioceramics for bone regeneration *Acta biomaterialia* **66** 81-92
- [25] Zhang W, Feng C, Yang G, Li G, Ding X, Wang S, Dou Y, Zhang Z, Chang J and Wu C 2017 3D-printed scaffolds with synergistic effect of hollow-pipe structure and bioactive ions for vascularized bone regeneration *Biomaterials* **135** 85-95
- [26] Uetsuji Y, Fujimoto S, Tsuchiia K and Hirano Y 2009 Cytotoxicity of piezoelectric materials in colony formation assay *Journal of the Society of Materials Science, Japan* **58** 943-7
- [27] Zhou H, Luchini T, Bhaduri S and Deng L 2015 Silicon (Si) containing bone cements: a review *Materials Technology* **30** B229-B36

- [28] Zhou X, Zhang N, Mankoci S and Sahai N 2017 Silicates in orthopedics and bone tissue engineering materials *Journal of Biomedical Materials Research Part A* **105** 2090-102
- [29] Lai W, Garino J, Flaitz C and Ducheyne P 2005 Excretion of resorption products from bioactive glass implanted in rabbit muscle *Journal of Biomedical Materials Research Part A: An Official Journal of The Society for Biomaterials, The Japanese Society for Biomaterials, and The Australian Society for Biomaterials and the Korean Society for Biomaterials* **75** 398-407
- [30] Dobbie J and Smith M J 1982 The silicon content of body fluids *Scottish Medical Journal* **27** 17-9
- [31] Lin K, Liu Y, Huang H, Chen L, Wang Z and Chang J 2015 Degradation and silicon excretion of the calcium silicate bioactive ceramics during bone regeneration using rabbit femur defect model *Journal of Materials Science: Materials in Medicine* **26** 1-8
- [32] Jin X, Chang J, Zhai W and Lin K 2011 Preparation and characterization of clinoenstatite bioceramics *Journal of the American Ceramic Society* **94** 66-70
- [33] Jurkić L M, Capanec I, Pavelić S K and Pavelić K 2013 Biological and therapeutic effects of ortho-silicic acid and some ortho-silicic acid-releasing compounds: New perspectives for therapy *Nutrition & metabolism* **10** 1-12
- [34] Reffitt D, Ogston N, Jugdaohsingh R, Cheung H, Evans B A J, Thompson R, Powell J and Hampson G 2003 Orthosilicic acid stimulates collagen type 1 synthesis and osteoblastic differentiation in human osteoblast-like cells in vitro *Bone* **32** 127-35
- [35] Carlisle E M 1981 Silicon: a requirement in bone formation independent of vitamin D1 *Calcif Tissue Int* **33** 27-34

- [36] Bose S, Tarafder S, Banerjee S S, Davies N M and Bandyopadhyay A 2011 Understanding in vivo response and mechanical property variation in MgO, SrO and SiO₂ doped β -TCP *Bone* **48** 1282-90
- [37] Zou S, Ireland D, Brooks R A, Rushton N and Best S 2009 The effects of silicate ions on human osteoblast adhesion, proliferation, and differentiation *Journal of biomedical materials research. Part B, Applied biomaterials* **90** 123-30
- [38] Balamurugan A, Rebelo A H, Lemos A F, Rocha J H, Ventura J M and Ferreira J M 2008 Suitability evaluation of sol-gel derived Si-substituted hydroxyapatite for dental and maxillofacial applications through in vitro osteoblasts response *Dental materials : official publication of the Academy of Dental Materials* **24** 1374-80
- [39] Bavya Devi K, Nandi S K and Roy M 2019 Magnesium Silicate Bioceramics for Bone Regeneration: A Review *Journal of the Indian Institute of Science* **99** 261-88
- [40] Schwarz K and Milne D B 1972 Growth-promoting Effects of Silicon in Rats *Nature* **239** 333-4
- [41] Burdan K and Kolmas J 2017 Hydroxyapatites enriched in silicon – Bioceramic materials for biomedical and pharmaceutical applications *Progress in Natural Science: Materials International* **27**
- [42] Palakurthy S, Azeem P A, Venugopal Reddy K R, Penugurti V and Manavathi B 2019 A comparative study on in vitro behavior of calcium silicate ceramics synthesized from biowaste resources *Journal of the American Ceramic Society*
- [43] Dörfler A, Detsch R, Romeis S, Schmidt J, Eisermann C, Peukert W and Boccaccini A R 2014 Biocompatibility of submicron Bioglass® powders obtained by a top-down approach *Journal of Biomedical Materials Research Part B: Applied Biomaterials* **102** 952-61

- [44] Arora M and Arora E 2017 The Promise of Silicon: bone regeneration and increased bone density *Journal of Arthroscopy and Joint Surgery* **4** 103-5
- [45] Agotegaray M 2020 *Silica-Based Nanotechnology for Bone Disease Treatment*, ed M Agotegaray (Cham: Springer International Publishing) pp 39-44
- [46] Piste P, Sayaji D and Avinash M 2012 Calcium and its Role in Human Body *Int J Res Pharm Biomed Sci* **4** 2229-3701
- [47] Wu C, Chang J, Wang J, Ni S and Zhai W 2005 Preparation and Characteristics of a Calcium Magnesium Silicate (Bredigite) Bioactive Ceramic *Biomaterials* **26** 2925-31
- [48] Maeno S, Niki Y, Matsumoto H, Morioka H, Yatabe T, Funayama A, Toyama Y, Taguchi T and Tanaka J 2005 The effect of calcium ion concentration on osteoblast viability, proliferation and differentiation in monolayer and 3D culture *Biomaterials* **26** 4847-55
- [49] Riddle R C, Taylor A F, Genetos D C and Donahue H J 2006 MAP kinase and calcium signaling mediate fluid flow-induced human mesenchymal stem cell proliferation *American journal of physiology. Cell physiology* **290** C776-84
- [50] O'Neill E, Awale G, Daneshmandi L, Umerah O and Lo K W 2018 The roles of ions on bone regeneration *Drug discovery today* **23** 879-90
- [51] O'flaherty E J 1992 Modeling bone mineral metabolism, with special reference to calcium and lead *Neurotoxicology* **13** **4** 789-97
- [52] Volpe S L 2013 Magnesium in disease prevention and overall health *Advances in nutrition (Bethesda, Md.)* **4** 378s-83s
- [53] Walker J, Shadanbaz S, Woodfield T B, Staiger M P and Dias G J 2014 Magnesium biomaterials for orthopedic application: a review from a biological perspective *Journal of biomedical materials research. Part B, Applied biomaterials* **102** 1316-31

- [54] Sezer N, Evis Z, Kayhan S M, Tahmasebifar A and Koç M 2018 Review of magnesium-based biomaterials and their applications *Journal of Magnesium and Alloys* **6** 23-43
- [55] Venkatraman S K and Swamiappan S 2020 Review on calcium-and magnesium-based silicates for bone tissue engineering applications *Journal of Biomedical Materials Research Part A* **108** 1546-62
- [56] Wang J, Ma X Y, Feng Y F, Ma Z S, Ma T C, Zhang Y, Li X, Wang L and Lei W 2017 Magnesium Ions Promote the Biological Behaviour of Rat Calvarial Osteoblasts by Activating the PI3K/Akt Signalling Pathway *Biological trace element research* **179** 284-93
- [57] Bosch-Rué E, Diez-Tercero L, Giordano-Kelhoffer B, Delgado L M, Bosch B M, Hoyos-Nogués M, Mateos-Timoneda M A, Tran P A, Gil F J and Perez R A 2020 Biological Roles and Delivery Strategies for Ions to Promote Osteogenic Induction *Frontiers in cell and developmental biology* **8** 614545
- [58] Devi K B, Lee B, Roy A, Kumta P N and Roy M 2017 Effect of zinc oxide doping on in vitro degradation of magnesium silicate bioceramics *Materials Letters* **207** 100-3
- [59] Bandyopadhyay A, Bernard S, Xue W and Bose S 2006 Calcium phosphate-based resorbable ceramics: Influence of MgO, ZnO, and SiO₂ dopants *Journal of the American Ceramic Society* **89** 2675-88
- [60] Song Y, Wen S, Li M, Su Q and Jiang Q 2002 Preparation and physicochemical process of nanosized hydroxyapatite powders with high purity *J Inorg Mater* **17** 985-91
- [61] Zysset P K, Guo X E, Hoffler C E, Moore K E and Goldstein S A 1999 Elastic modulus and hardness of cortical and trabecular bone lamellae measured by nanoindentation in the human femur *Journal of biomechanics* **32** 1005-12

- [62] Dempster W T and Liddicoat R T 1952 Compact bone as a non-isotropic material
- [63] Evans F G 1976 Mechanical properties and histology of cortical bone from younger and older men *The Anatomical Record* **185** 1-11
- [64] Tsuda K 1957 Studies on the Bend Strength Test and Impulsive Bending Test on Human Compact Bone *J. Kyoto Pref. Med.* **61** 1001
- [65] Sedlin E D 1965 A rheologic model for cortical bone: a study of the physical properties of human femoral samples *Acta Orthopaedica Scandinavica* **36** 1-77
- [66] Huang W and Schwarz E M 2002 Mechanisms of bone resorption and new bone formation in spondyloarthropathies *Current rheumatology reports* **4** 513-7
- [67] Teitelbaum S L 2000 Bone resorption by osteoclasts *Science (New York, N.Y.)* **289** 1504-8
- [68] Fukada E and Yasuda I 1957 On the piezoelectric effect of bone *Journal of the physical society of Japan* **12** 1158-62
- [69] Minary-Jolandan M and Yu M-F 2010 Shear piezoelectricity in bone at the nanoscale *Applied Physics Letters* **97**
- [70] Reinish G and Nowick A 1976 Effect of moisture on the electrical properties of bone *Journal of The Electrochemical Society* **123** 1451
- [71] Fukada E and Yasuda I 1964 Piezoelectric effects in collagen *Japanese Journal of Applied Physics* **3** 117
- [72] Turner C, Wang T and Burr D 2001 Shear strength and fatigue properties of human cortical bone determined from pure shear tests *Calcified tissue international* **69**
- [73] Dubey A K, Kinoshita R and Kakimoto K-i 2015 Piezoelectric sodium potassium niobate mediated improved polarization and in vitro bioactivity of hydroxyapatite *RSC Advances* **5** 19638-46

- [74] Baxter F R, Bowen C R, Turner I G and Dent A C 2010 Electrically active bioceramics: a review of interfacial responses *Annals of biomedical engineering* **38** 2079-92
- [75] Khare D, Basu B and Dubey A K 2020 Electrical stimulation and piezoelectric biomaterials for bone tissue engineering applications *Biomaterials* **258** 120280
- [76] Singh A, Singh P and Dubey A K 2022 Effect of incorporation of piezoelectric phases on antibacterial and cellular response of borate bioactive glass *Open Ceramics* **9** 100234
- [77] More N and Kapusetti G 2017 Piezoelectric material - A promising approach for bone and cartilage regeneration *Medical hypotheses* **108** 10-6
- [78] Srirussamee K, Mobini S, Cassidy N J and Cartmell S H 2019 Direct electrical stimulation enhances osteogenesis by inducing Bmp2 and Spp1 expressions from macrophages and preosteoblasts *Biotechnology and bioengineering* **116** 3421-32
- [79] Dubey A and Basu B 2013 Pulsed Electrical Stimulation and Surface Charge Induced Cell Growth on Multistage Spark Plasma Sintered Hydroxyapatite-Barium Titanate Piezobiocomposite *Journal of the American Ceramic Society* **97**
- [80] Verma A S, Sharma A, Kumar A, Mukhopadhyay A, Kumar D and Dubey A K 2020 Multifunctional Response of Piezoelectric Sodium Potassium Niobate (NKN)-Toughened Hydroxyapatite-Based Biocomposites *ACS applied bio materials* **3** 5287-99
- [81] Park J, Von Recum A, Kenner G, Kelly B, Coffeen W and Grether M 1980 Piezoelectric ceramic implants: a feasibility study *Journal of biomedical materials research* **14** 269-77

- [82] Park J, Kelly B, Kenner G, Von Recum A, Grether M and Coffeen W 1981 Piezoelectric ceramic implants: in vivo results *Journal of biomedical materials research* **15** 103-10
- [83] Wu Z, Tang T, Guo H, Tang S, Niu Y, Zhang J, Zhang W, Ma R, Su J and Liu C 2014 In vitro degradability, bioactivity and cell responses to mesoporous magnesium silicate for the induction of bone regeneration *Colloids and Surfaces B: Biointerfaces* **120** 38-46
- [84] Sun T-W, Yu W-L, Zhu Y-J, Yang R-L, Shen Y-Q, Chen D-Y, He Y-H and Chen F 2017 Hydroxyapatite nanowire@ magnesium silicate core-shell hierarchical nanocomposite: Synthesis and application in bone regeneration *ACS Applied Materials & Interfaces* **9** 16435-47
- [85] Feng S, Li J, Jiang X, Li X, Pan Y, Zhao L, Boccaccini A R, Zheng K, Yang L and Wei J 2016 Influences of mesoporous magnesium silicate on the hydrophilicity, degradability, mineralization and primary cell response to a wheat protein based biocomposite *Journal of Materials Chemistry B* **4** 6428-36
- [86] Kang Y G, Wei J, Shin J W, Wu Y R, Su J, Park Y S and Shin J-W 2018 Enhanced biocompatibility and osteogenic potential of mesoporous magnesium silicate/polycaprolactone/wheat protein composite scaffolds *International journal of nanomedicine* 1107-17
- [87] Hazar A B Y 2007 Preparation and in vitro bioactivity of CaSiO₃ powders *Ceramics international* **33** 687-92
- [88] Azarov G, Maiorova E, Oborina M and Belyakov A 1995 Wollastonite raw materials and their applications (a review) *Glass and Ceramics* **52** 237-40

- [89] Wu C, Ramaswamy Y, Kwik D and Zreiqat H 2007 The effect of strontium incorporation into CaSiO₃ ceramics on their physical and biological properties *Biomaterials* **28** 3171-81
- [90] Lin K, Xia L, Li H, Jiang X, Pan H, Xu Y, Lu W W, Zhang Z and Chang J 2013 Enhanced osteoporotic bone regeneration by strontium-substituted calcium silicate bioactive ceramics *Biomaterials* **34** 10028-42
- [91] Hwang K, Song J, Jo J, Yang H, Park Y, Ong J and Rawls H 2002 Effect of poling conditions on growth of calcium phosphate crystal in ferroelectric BaTiO₃ ceramics *Journal of Materials Science: Materials in Medicine* **13** 133-8
- [92] Khare D, Singh P and Dubey A K 2022 Interplay of surface polarization charge, dynamic electrical stimulation and compositional modification towards accelerated osteogenic response of Na(x)K(1-x)NbO₃ piezo-bioceramics *Biomaterials advances* **140** 213042
- [93] Tandon B, Blaker J J and Cartmell S H 2018 Piezoelectric materials as stimulatory biomedical materials and scaffolds for bone repair *Acta biomaterialia* **73** 1-20
- [94] Srirussamee K, Xue R, Mobini S, Cassidy N J and Cartmell S H 2021 Changes in the extracellular microenvironment and osteogenic responses of mesenchymal stem/stromal cells induced by in vitro direct electrical stimulation *Journal of tissue engineering* **12** 2041731420974147
- [95] Ohgaki M, Kizuki T, Katsura M and Yamashita K 2001 Manipulation of selective cell adhesion and growth by surface charges of electrically polarized hydroxyapatite *Journal of Biomedical Materials Research: An Official Journal of The Society for Biomaterials, The Japanese Society for Biomaterials, and The Australian Society for Biomaterials and the Korean Society for Biomaterials* **57** 366-73

- [96] Chen W, Yu Z, Pang J, Yu P, Tan G and Ning C 2017 Fabrication of biocompatible potassium sodium niobate piezoelectric ceramic as an electroactive implant *Materials* **10** 345
- [97] Verma A S, Kumar D and Dubey A K 2020 Antibacterial and cellular response of piezoelectric Na_{0.5}K_{0.5}NbO₃ modified 1393 bioactive glass *Materials Science and Engineering: C* **116** 111138
- [98] Singh A and Dubey A K 2018 Various biomaterials and techniques for improving antibacterial response *ACS Applied Bio Materials* **1** 3-20
- [99] Kalbacova M, Roessler S, Hempel U, Tsaryk R, Peters K, Scharnweber D, Kirkpatrick J C and Dieter P 2007 The effect of electrochemically simulated titanium cathodic corrosion products on ROS production and metabolic activity of osteoblasts and monocytes/macrophages *Biomaterials* **28** 3263-72
- [100] Boda S K, Bajpai I and Basu B 2016 Inhibitory effect of direct electric field and HA-ZnO composites on *S. aureus* biofilm formation *Journal of Biomedical Materials Research Part B: Applied Biomaterials* **104** 1064-75
- [101] Khare D, Singh A and Dubey A K 2021 Influence of Na and K contents on the antibacterial response of piezoelectric biocompatible Na_xK_{1-x}NbO₃ (x= 0.2–0.8) *Materials Today Communications* **27** 102317
- [102] Tan G, Wang S, Zhu Y, Zhou L, Yu P, Wang X, He T, Chen J, Mao C and Ning C 2016 Surface-selective preferential production of reactive oxygen species on piezoelectric ceramics for bacterial killing *ACS applied materials & interfaces* **8** 24306-9
- [103] Swain S, Padhy R N and Rautray T R 2020 Polarized piezoelectric bioceramic composites exhibit antibacterial activity *Materials Chemistry and Physics* **239** 122002

- [104] Singh A, Reshma K and Dubey A K 2020 Combined effect of surface polarization and ZnO addition on antibacterial and cellular response of Hydroxyapatite-ZnO composites *Materials Science and Engineering: C* **107** 110363
- [105] Learmonth I D, Young C and Rorabeck C 2007 The operation of the century: total hip replacement *The Lancet* **370** 1508-19
- [106] Stratton-Powell A A, Pasko K M, Brockett C L and Tipper J L 2016 The biologic response to polyetheretherketone (PEEK) wear particles in total joint replacement: a systematic review *Clinical Orthopaedics and Related Research®* **474** 2394-404
- [107] Chen Z, Meng H, Xing G, Chen C, Zhao Y, Jia G, Wang T, Yuan H, Ye C and Zhao F 2006 Acute toxicological effects of copper nanoparticles in vivo *Toxicology letters* **163** 109-20
- [108] Ding T, Xue Y, Lu H, Huang Z and Sun J 2012 Effect of particle size of hydroxyapatite nanoparticles on its biocompatibility *IEEE transactions on nanobioscience* **11** 336-40
- [109] Margevicius K J, Bauer T W, McMahon J T, Brown S A and Merritt K 1994 Isolation and characterization of debris in membranes around total joint prostheses *JBJS* **76** 1664-75
- [110] Wang J-X, Fan Y-B, Gao Y, Hu Q-H and Wang T-C 2009 TiO₂ nanoparticles translocation and potential toxicological effect in rats after intraarticular injection *Biomaterials* **30** 4590-600
- [111] Mabrouk M, Ibrahim Fouad G, Beherei H H and Das D B 2022 Barium Oxide Doped Magnesium Silicate Nanopowders for Bone Fracture Healing: Preparation, Characterization, Antibacterial and In Vivo Animal Studies *Pharmaceutics* **14** 1582

- [112] Singh P and Dubey A K 2023 Accelerated Osteogenic Response of Electrostatically Stimulated $Mg_{1-x}Ca_xSi_{1-x}Zr_xO_3$ ($x = 0-0.4$) Bioelectrets *ACS Biomaterials Science & Engineering* **9** 6293-308
- [113] Singh P and Dubey A K 2024 Electret-induced antibacterial response of $Mg_{1-x}Ca_xSi_{1-x}Zr_xO_3$ ($x= 0-0.4$) bioceramics *Journal of the American Ceramic Society*
- [114] Ni S and Chang J 2009 In vitro degradation, bioactivity, and cytocompatibility of calcium silicate, dimagnesium silicate, and tricalcium phosphate bioceramics *Journal of biomaterials applications* **24** 139-58
- [115] Bakhsheshi-Rad H, Najafinezhad A, Hadisi Z, Iqbal N, Daroonparvar M, Sharif S, Ismail A F, Akbari M, RamaKrishna S and Berto F 2021 Characterization and biological properties of nanostructured clinoenstatite scaffolds for bone tissue engineering applications *Materials Chemistry and Physics* **259** 123969
- [116] Shin J-H, Lee D-Y and Lee S-H 2018 Comparison of antimicrobial activity of traditional and new developed root sealers against pathogens related root canal *Journal of Dental Sciences* **13** 54-9

Bibliography

- [1] Cullity B D 1956 *Elements of X-ray Diffraction*: Addison-Wesley Publishing)
- [2] Londoño-Restrepo S M, Jeronimo-Cruz R, Millán-Malo B M, Rivera-Muñoz E M and Rodríguez-García M E 2019 Effect of the nano crystal size on the X-ray diffraction patterns of biogenic hydroxyapatite from human, bovine, and porcine bones *Scientific reports* **9** 5915
- [3] Choi C K 2010? Comparison between SiOC Thin Film by plasma enhance chemical vapor deposition and SiO₂ Thin Film by Fourier Transform Infrared Spectroscopy? *Journal of the Korean Physical Society* **56** 1150-5
- [4] Vancea C, Mihailescu M, Negrea A, Mosoarca G, Ciopec M, Duteanu N, Negrea P and Minzatu V 2020 Batch and fixed-bed column studies on palladium recovery from acidic solution by modified MgSiO₃ *International Journal of Environmental Research and Public Health* **17** 9500
- [5] Sagadevan S, Venilla S, Marlinda A, Johan M, Wahab Y A, Zakaria R, Umar A, Hegazy H H, Algarni H and Ahmad N 2020 Effect of synthesis temperature on the morphologies, optical and electrical properties of MgO nanostructures *Journal of nanoscience and nanotechnology* **20** 2488-94
- [6] Kumar P, Dehiya B S, Sindhu A, Kumar R, Pruncu C I and Yadav A 2020 Fabrication and characterization of silver nanorods incorporated calcium silicate scaffold using polymeric sponge replica technique *Materials & Design* **195** 109026
- [7] El Hilaly J, Israili Z H and Lyoussi B 2004 Acute and chronic toxicological studies of *Ajuga iva* in experimental animals *Journal of ethnopharmacology* **91** 43-50
- [8] Bailey S A, Zidell R H and Perry R W 2004 Relationships between organ weight and body/brain weight in the rat: what is the best analytical endpoint? *Toxicologic pathology* **32** 448-66

- [9] Buesen R, Landsiedel R, Sauer U G, Wohlleben W, Groeters S, Strauss V, Kamp H and van Ravenzwaay B 2014 Effects of SiO₂, ZrO₂, and BaSO₄ nanomaterials with or without surface functionalization upon 28-day oral exposure to rats *Archives of toxicology* **88** 1881-906
- [10] Kaplan M M and Righetti A 1970 Induction of rat liver alkaline phosphatase: the mechanism of the serum elevation in bile duct obstruction *The Journal of clinical investigation* **49** 508-16
- [11] Gawlik Z, Fiejka E, Aleksandrowicz R and Wiśniewska I 1978 Activity of alkaline phosphatase in the healing rat liver after hepatectomy *Folia Histochemica et Cytochemica* **16** 343-9
- [12] Wright T M and Vandenberg A M 2007 Risperidone-and quetiapine-induced cholestasis *Annals of Pharmacotherapy* **41** 1518-23
- [13] Singh A, Bhat T and Sharma O 2011 Clinical biochemistry of hepatotoxicity *J Clin Toxicol S* **4** 2161-0495
- [14] Panda N 1999 Kidney in: Textbook of Biochemistry and Human biology *Prentise Hall India* 290-6
- [15] Chan P, O'hara G and Hayes A W 1982 Principles and methods for acute and subchronic toxicity *Principles and methods of toxicology* **12** 17-9
- [16] Adefemi O, Elujoba A and Odesanmi W 1988 Evaluation of the toxicity potential of Cassia podocarpa with reference to official Senna *West Afr J Pharmacol Drug Res* **8** 41-8
- [17] Oh R C and Hustead T R 2011 Causes and evaluation of mildly elevated liver transaminase levels *American family physician* **84** 1003-8

- [18] Ene-ojo A S, Chinedu E A and Yakasai F M 2013 Toxic Effects of Sub-Chronic Administration of Chloroform Extract of *Artemisia maciverae* Linn on the Kidney of Swiss Albino Rats
- [19] Timonen K L, Vanninen E, De Hartog J, Ibald-Mulli A, Brunekreef B, Gold D R, Heinrich J, Hoek G, Lanki T and Peters A 2006 Effects of ultrafine and fine particulate and gaseous air pollution on cardiac autonomic control in subjects with coronary artery disease: the ULTRA study *Journal of exposure science & environmental epidemiology* **16** 332-41
- [20] Rich D Q, Zareba W, Beckett W, Hopke P K, Oakes D, Frampton M W, Bisognano J, Chalupa D, Bausch J and O'Shea K 2012 Are ambient ultrafine, accumulation mode, and fine particles associated with adverse cardiac responses in patients undergoing cardiac rehabilitation? *Environmental health perspectives* **120** 1162-9
- [21] Peters A, Hampel R, Cyrys J, Breitner S, Geruschkat U, Kraus U, Zareba W and Schneider A 2015 Elevated particle number concentrations induce immediate changes in heart rate variability: a panel study in individuals with impaired glucose metabolism or diabetes *Particle and fibre toxicology* **12** 1-11
- [22] Brook R D, Brook J R, Urch B, Vincent R, Rajagopalan S and Silverman F 2002 Inhalation of fine particulate air pollution and ozone causes acute arterial vasoconstriction in healthy adults *Circulation* **105** 1534-6
- [23] Hamanaka R B and Mutlu G M 2018 Particulate matter air pollution: effects on the cardiovascular system *Frontiers in endocrinology* **9** 680
- [24] Wang J-X, Fan Y-B, Gao Y, Hu Q-H and Wang T-C 2009 TiO₂ nanoparticles translocation and potential toxicological effect in rats after intraarticular injection *Biomaterials* **30** 4590-600

- [25] Ding T, Xue Y, Lu H, Huang Z and Sun J 2012 Effect of particle size of hydroxyapatite nanoparticles on its biocompatibility *IEEE transactions on nanobioscience* **11** 336-40
- [26] Ibrahim K E, Al-Mutary M G, Bakhiet A O and Khan H A 2018 Histopathology of the liver, kidney, and spleen of mice exposed to gold nanoparticles *Molecules* **23** 1848
- [27] Yan G, Huang Y, Bu Q, Lv L, Deng P, Zhou J, Wang Y, Yang Y, Liu Q and Cen X 2012 Zinc oxide nanoparticles cause nephrotoxicity and kidney metabolism alterations in rats *Journal of Environmental Science and Health, Part A* **47** 577-88
- [28] Noori A, Karimi F, Fatahian S and Yazdani F 2014 Effects of zinc oxide nanoparticles on renal function in mice *International Journal of Biosciences (IJB)* **5** 140-6
- [29] Lipka J, Semmler-Behnke M, Sperling R A, Wenk A, Takenaka S, Schleh C, Kissel T, Parak W J and Kreyling W G 2010 Biodistribution of PEG-modified gold nanoparticles following intratracheal instillation and intravenous injection *Biomaterials* **31** 6574-81
- [30] Husain M, Wu D, Saber A T, Decan N, Jacobsen N R, Williams A, Yauk C L, Wallin H, Vogel U and Halappanavar S 2015 Intratracheally instilled titanium dioxide nanoparticles translocate to heart and liver and activate complement cascade in the heart of C57BL/6 mice *Nanotoxicology* **9** 1013-22
- [31] Modrzynska J, Mortensen A, Berthing T, Ravn-Haren G, Szarek J, Saber A T and Vogel U 2021 Effect on mouse liver morphology of CeO₂, TiO₂ and carbon black nanoparticles translocated from lungs or deposited intravenously *Applied Nano* **2** 222-41

- [32] Abdelhalim M A K and Jarrar B M 2011 Gold nanoparticles administration induced prominent inflammatory, central vein intima disruption, fatty change and Kupffer cells hyperplasia *Lipids in health and disease* **10** 1-6
- [33] Abdelhalim M A K and Jarrar B M 2011 Gold nanoparticles induced cloudy swelling to hydropic degeneration, cytoplasmic hyaline vacuolation, polymorphism, binucleation, karyopyknosis, karyolysis, karyorrhexis and necrosis in the liver *Lipids in Health and Disease* **10** 1-6
- [34] Abdelhalim M A K 2011 Gold nanoparticles administration induces disarray of heart muscle, hemorrhagic, chronic inflammatory cells infiltrated by small lymphocytes, cytoplasmic vacuolization and congested and dilated blood vessels *Lipids in health and disease* **10** 1-9
- [35] Sheikh Z, Brooks P J, Barzilay O, Fine N and Glogauer M 2015 Macrophages, foreign body giant cells and their response to implantable biomaterials *Materials* **8** 5671-701
- [36] Xia Z and Triffitt J T 2006 A review on macrophage responses to biomaterials *Biomedical materials* **1** R1
- [37] Sergijenko A, Roelofs A J, Riemen A H and De Bari C 2016 Bone marrow contribution to synovial hyperplasia following joint surface injury *Arthritis Research & Therapy* **18** 1-11
- [38] Asif Amin M, Fox D A and Ruth J H 2017 Synovial cellular and molecular markers in rheumatoid arthritis. In: *Seminars in immunopathology*: Springer) pp 385-93
- [39] Burke C J, Alizai H, Beltran L S and Regatte R R 2019 MRI of synovitis and joint fluid *Journal of Magnetic Resonance Imaging* **49** 1512-27
- [40] Lerouge S, Huk O, Yahia L H and Sedel L 1996 Characterization of in vivo wear debris from ceramic—ceramic total hip arthroplasties *Journal of Biomedical*

Materials Research: An Official Journal of The Society for Biomaterials and The Japanese Society for Biomaterials **32** 627-33

- [41] Hatton A, Nevelos J, Nevelos A, Banks R, Fisher J and Ingham E 2002 Alumina–alumina artificial hip joints. Part I: a histological analysis and characterisation of wear debris by laser capture microdissection of tissues retrieved at revision *Biomaterials* **23** 3429-40
- [42] Margevicius K J, Bauer T W, McMahon J T, Brown S A and Merritt K 1994 Isolation and characterization of debris in membranes around total joint prostheses *JBJS* **76** 1664-75
- [43] Yang S-Y, Ren W, Park Y, Sieving A, Hsu S, Nasser S and Wooley P H 2002 Diverse cellular and apoptotic responses to variant shapes of UHMWPE particles in a murine model of inflammation *Biomaterials* **23** 3535-43
- [44] Thrivikraman G, Madras G and Basu B 2014 In vitro/in vivo assessment and mechanisms of toxicity of bioceramic materials and its wear particulates *RSC Advances* **4** 12763-81

Bibliography

- [1] Santos M H, Oliveira M d, Souza L P d F, Mansur H S and Vasconcelos W L 2004 Synthesis control and characterization of hydroxyapatite prepared by wet precipitation process *Materials Research* **7** 625-30
- [2] Suryanarayana C and Norton M 2013 X-ray diffraction: a practical approach: Springer Science & Business Media *New York*
- [3] Sarkar S and Das R 2018 Shape effect on the elastic properties of Ag nanocrystals *Micro & Nano Letters* **13** 312-5
- [4] Tagliente M and Massaro M 2008 Strain-driven (0 0 2) preferred orientation of ZnO nanoparticles in ion-implanted silica *Nuclear Instruments and Methods in Physics Research Section B: Beam Interactions with Materials and Atoms* **266** 1055-61
- [5] Jacob R and Isac J 2015 X-ray diffraction line profile analysis of Ba_{0.6}Sr_{0.4}FexTi(1-x)O_{3-δ}(x= 0.4) *Int. J. Chem. Stud* **2** 12-21
- [6] Zak A K, Majid W A, Abrishami M E and Yousefi R 2011 X-ray analysis of ZnO nanoparticles by Williamson–Hall and size–strain plot methods *Solid State Sciences* **13** 251-6
- [7] Kokubo T and Takadama H 2006 How useful is SBF in predicting in vivo bone bioactivity? *Biomaterials* **27** 2907-15
- [8] Thrivikraman G, Mallik P K and Basu B 2013 Substrate conductivity dependent modulation of cell proliferation and differentiation in vitro *Biomaterials* **34** 7073-85
- [9] Golub E E and Boesze-Battaglia K 2007 The role of alkaline phosphatase in mineralization *Current opinion in Orthopaedics* **18** 444-8
- [10] Robey P G 1989 The biochemistry of bone *Endocrinology and metabolism clinics of North America* **18** 859-902

- [11] Khare D, Basu B and Dubey A K 2020 Electrical stimulation and piezoelectric biomaterials for bone tissue engineering applications *Biomaterials* **258** 120280
- [12] More N and Kapusetti G 2017 Piezoelectric material—a promising approach for bone and cartilage regeneration *Medical hypotheses* **108** 10-6
- [13] Di Virgilio F, Steinberg T and Silverstein S 1990 Inhibition of Fura-2 sequestration and secretion with organic anion transport blockers *Cell calcium* **11** 57-62
- [14] Van de Loosdrecht A, Beelen R, Ossenkoppele g, Broekhoven M and Langenhuijsen M 1994 A tetrazolium-based colorimetric MTT assay to quantitate human monocyte mediated cytotoxicity against leukemic cells from cell lines and patients with acute myeloid leukemia *Journal of immunological methods* **174** 311-20
- [15] Liu Y, Peterson D A, Kimura H and Schubert D 1997 Mechanism of cellular 3-(4, 5-dimethylthiazol-2-yl)-2, 5-diphenyltetrazolium bromide (MTT) reduction *Journal of neurochemistry* **69** 581-93
- [16] Xie C, Lu X, Han L, Xu J, Wang Z, Jiang L, Wang K, Zhang H, Ren F and Tang Y 2016 Biomimetic mineralized hierarchical graphene oxide/chitosan scaffolds with adsorbability for immobilization of nanoparticles for biomedical applications *ACS applied materials & interfaces* **8** 1707-17
- [17] Touati D, Jacques M, Tardat B, Bouchard L and Despied S 1995 Lethal oxidative damage and mutagenesis are generated by iron in delta fur mutants of Escherichia coli: protective role of superoxide dismutase *Journal of bacteriology* **177** 2305-14
- [18] Singh A and Dubey A K 2021 Improved antibacterial and cellular response of electrets and piezobioceramics *Journal of Biomaterials Applications* **36** 441-59
- [19] Aebi H, Wyss S R, Scherz B and Skvaril F 1974 Heterogeneity of erythrocyte catalase II: isolation and characterization of normal and variant erythrocyte catalase and their subunits *European journal of biochemistry* **48** 137-45

- [20] Lowry O, Rosebrough N, Farr A L and Randall R 1951 Protein measurement with the Folin phenol reagent *Journal of biological chemistry* **193** 265-75
- [21] Ustinova A and Riabinin V 2003 Effect of chronic gamma-irradiation on lipid peroxidation in CBA mouse blood serum *Radiatsionnaia Biologiia, Radioecologiia* **43** 459-63
- [22] Buege J A and Aust S D 1978 *Methods in enzymology*: Elsevier) pp 302-10

Bibliography

- [1] Song M E, Kim J S, Joung M R, Nahm S, Kim Y S, Paik J H and Choi B H 2008 Synthesis and microwave dielectric properties of MgSiO₃ ceramics *Journal of the American ceramic Society* **91** 2747-50
- [2] Kanzaki M and Xue X 2017 Protoenstatite in MgSiO₃ samples prepared by conventional solid state reaction *Journal of Mineralogical and Petrological Sciences* 170616
- [3] Singh P, Yu X, Kumar A and Dubey A K 2022 Recent advances in silicate-based crystalline bioceramics for orthopedic applications: a review *Journal of Materials Science* 1-43
- [4] Verma A S, Sharma A, Kumar A, Mukhopadhyay A, Kumar D and Dubey A K 2020 Multifunctional response of piezoelectric sodium potassium niobate (NKN)-toughened hydroxyapatite-based biocomposites *ACS Applied Bio Materials* **3** 5287-99
- [5] Smyth J R 1974 Experimental study on the polymorphism of enstatite *American Mineralogist: Journal of Earth and Planetary Materials* **59** 345-52
- [6] Mielcarek W, Nowak-Woźny D and Prociów K 2004 Correlation Between MgSiO₃ Phases and Mechanical Durability of Steatite Ceramics *Journal of the European Ceramic Society* **24** 3817-21
- [7] Parthasarathy S and Parthasarathi V 1976 A statistical study on the measurability of Bijvoet differences in crystals with type-I and type-II degree of centrosymmetry *Acta Crystallographica Section A: Crystal Physics, Diffraction, Theoretical and General Crystallography* **32** 768-71
- [8] Shannon R D 1976 Revised effective ionic radii and systematic studies of interatomic distances in halides and chalcogenides *Acta crystallographica section A: crystal physics, diffraction, theoretical and general crystallography* **32** 751-67

- [9] Sun H, Zhang Q, Yang H and Zou J 2007 (Ca_{1-x}Mg_x) SiO₃: a low-permittivity microwave dielectric ceramic system *Materials Science and Engineering: B* **138** 46-50
- [10] Hameed I, Li L, Liu X Q and Chen X M 2022 Ultra low loss (Mg_{1-x}Ca_x)₂SiO₄ dielectric ceramics (x= 0 to 0.15) for millimeter wave applications *Journal of the American Ceramic Society* **105** 2010-9
- [11] Hazzez M, Ihzaz N, Boudard M and Oumezzine M 2016 Crystal structure, phase transitions, and magnetic properties of titanium doped La_{0.5}Sr_{0.5}MnO₃ perovskites *Physica B: Condensed Matter* **487** 78-84
- [12] Bian R, An S, Wang X, Xue Y, Tian J, Liang Z and Song Z 2023 Ca²⁺ doped TiO₂ nano-sized polygon plates with oxygen vacancies for photocatalytic hydrogen evolution *International Journal of Hydrogen Energy*
- [13] Ullah A, Liu H, Pengcheng Z, Hao H, Iqbal J, Cao M, Yao Z, Ahmad A S and Manan A 2019 Influence of Co substitution on the phase, microstructure, and microwave dielectric properties of MgSiO₃ ceramics *Journal of Materials Science: Materials in Electronics* **30** 6469-74
- [14] Ullah A, Liu H, Hao H, Iqbal J, Yao Z, Cao M and Xu Q 2016 Phase and Microstructure Evaluation and Microwave Dielectric Properties of Mg_{1-x}Ni_xSiO₃ Ceramics *Journal of Electronic Materials* **45** 5133-9
- [15] Zhang H, Li N, Li K and Xue D 2007 Structural stability and formability of ABO₃-type perovskite compounds *Acta Crystallographica Section B: Structural Science* **63** 812-8
- [16] Oh T 2010 Comparison Between SiOC Thin Film by Plasma Enhance Chemical Vapor Deposition and SiO₂ Thin Film by Fourier Transform Infrared Spectroscopy *Journal of The Korean Physical Society - J KOREAN PHYS SOC* **56**

- [17] Vancea C, Mihailescu M, Adina N, Mosoarca G, Mihaela C, Duteanu N, Negrea P and Vasile M 2020 Batch and Fixed-Bed Column Studies on Palladium Recovery from Acidic Solution by Modified MgSiO₃ *International Journal of Environmental Research and Public Health* **17** 9500
- [18] Ernawati L, Wahyuono R A, Laksono A D, Ningrum A, Handayani K and Sabrina A 2021 Wollastonite (CaSiO₃)-based Composite Particles for Synthetic Food Dyes (Brilliant Blue) Removal in Aquatic Media: Synthesis, Characterization and Kinetic study. In: *IOP Conference Series: Materials Science and Engineering*: IOP Publishing) p 012001
- [19] Ernawati L, Yusariarta A, Alviany R and Halim A 2022 Effect of CaO/SiO₂ compositions on the structure formation of mesoporous calcium silicate (CaSiO₃) composite particles as adsorbent for organic dye removal. In: *IOP Conference Series: Earth and Environmental Science*: IOP Publishing) p 012008
- [20] Sembiring S, Riyanto A, Simanjuntak W and Situmeang R 2017 Effect of MgO-SiO₂ Ratio on the Forsterite (Mg₂SiO₄) Precursors Characteristics Derived from Amorphous Rice Husk Silica *Oriental Journal of Chemistry* **33** 1828-36
- [21] Prasanth C, Kumar H P, Pazhani R, Solomon S and Thomas J 2008 Synthesis, characterization and microwave dielectric properties of nanocrystalline CaZrO₃ ceramics *Journal of alloys and compounds* **464** 306-9
- [22] Evangeline B, Azeem P A, Rao R P, Swati G and Haranath D 2017 Structural and luminescent features of cerium doped CaZrO₃ blue nanophosphors *Journal of Alloys and Compounds* **705** 618-23
- [23] Terzioğlu P and Yucel S 2012 Synthesis of magnesium silicate from wheat husk ash: Effects of parameters on structural and surface properties *BioResources* **7**

- [24] Shuai C, Mao Z, Han Z, Peng S and Li Z 2014 Fabrication and characterization of calcium silicate scaffolds for tissue engineering *Journal of Mechanics in Medicine and Biology* **14** 1450049
- [25] Myat-Htun M, Noor A-F M, Kawashita M and Ismail Y M B 2022 Tailoring mechanical and in vitro biological properties of calcium–silicate based bioceramic through iron doping in developing future material *journal of the mechanical behavior of biomedical materials* **128** 105122
- [26] Cheng Z and Teoh S-H 2004 Surface modification of ultra thin poly (ϵ -caprolactone) films using acrylic acid and collagen *Biomaterials* **25** 1991-2001
- [27] Yang J, Bei J and Wang S 2002 Enhanced cell affinity of poly (D, L-lactide) by combining plasma treatment with collagen anchorage *Biomaterials* **23** 2607-14
- [28] Cao H, Huo W, Ma S, Zhang Y and Zhou L 2018 Microstructure and Corrosion Behavior of Composite Coating on Pure Mg Acquired by Sliding Friction Treatment and Micro-Arc Oxidation. In: *Materials*,
- [29] Greczynski G and Hultman L 2022 A step-by-step guide to perform x-ray photoelectron spectroscopy *Journal of Applied Physics* **132** 011101
- [30] Zhu B, Liu B, Qu C, Zhang H, Guo W, Liang Z, Chen F and Zou R 2017 Tailoring Biomass-Derived Carbon for High-Performance Supercapacitor from Controllably Cultivated Algae Microspheres *Journal of Materials Chemistry A* **6**
- [31] Dwivedi G, Joshi A G, Kumar S, Chou H, Yang K, Jhong D, Chan W, Ghosh A and Chatterjee S 2016 Electronic structure study of wide band gap magnetic semiconductor (La_{0.6}Pr_{0.4})_{0.65}Ca_{0.35}MnO₃ nanocrystals in paramagnetic and ferromagnetic phases *Applied Physics Letters* **108** 172402
- [32] Yuan Y, Zhao Z, Zheng J, Yang M, Qiu L, Li Z and Zou Z 2010 Polymerizable complex synthesis of BaZr_{1-x}Sn_xO₃ photocatalysts: Role of Sn⁴⁺ in the band

- structure and their photocatalytic water splitting activities *Journal of Materials Chemistry* **20** 6772-9
- [33] Pilli A, Jones J, Chugh N, Kelber J, Pasquale F and LaVoie A 2019 Atomic layer deposition of BN as a novel capping barrier for B₂O₃ *Journal of Vacuum Science & Technology A: Vacuum, Surfaces, and Films* **37** 041505
- [34] Wu Y, Lin Y and Xu J 2019 Synthesis of Ag–Ho, Ag–Sm, Ag–Zn, Ag–Cu, Ag–Cs, Ag–Zr, Ag–Er, Ag–Y and Ag–Co metal organic nanoparticles for UV-Vis-NIR wide-range bio-tissue imaging *Photochemical & Photobiological Sciences* **18** 1081-91
- [35] Chen X, Liu L, Yu P Y and Mao S S 2011 Increasing Solar Absorption for Photocatalysis with Black Hydrogenated Titanium Dioxide Nanocrystals *Science* **331** 746-50
- [36] Chastain J and King Jr R C 1992 Handbook of X-ray photoelectron spectroscopy *Perkin-Elmer Corporation* **40** 221
- [37] Wegmann M, Watson L and Hendry A 2004 XPS Analysis of Submicrometer Barium Titanate Powder *Journal of the American Ceramic Society* **87** 371-7
- [38] Schaub R, Thostrup P, Lopez N, Lægsgaard E, Stensgaard I, Nørskov J K and Besenbacher F 2001 Oxygen vacancies as active sites for water dissociation on rutile TiO₂ (110) *Physical Review Letters* **87** 266104
- [39] Hu H, Ji H-F and Sun Y 2013 The effect of oxygen vacancies on water wettability of a ZnO surface *Physical Chemistry Chemical Physics* **15** 16557-65
- [40] Yu H, Li J, Zhang Y, Yang S, Han K, Dong F, Ma T and Huang H 2019 Three-in-one oxygen vacancies: whole visible-spectrum absorption, efficient charge separation, and surface site activation for robust CO₂ photoreduction *Angewandte Chemie International Edition* **58** 3880-4

- [41] Wan L, Tian W, Li N, Chen D, Xu Q, Li H, He J and Lu J 2022 Hydrophilic porous PVDF membrane embedded with BaTiO₃ featuring controlled oxygen vacancies for piezocatalytic water cleaning *Nano Energy* **94** 106930
- [42] Khare D, Singh P and Dubey A K 2022 Interplay of surface polarization charge, dynamic electrical stimulation and compositional modification towards accelerated osteogenic response of Na_xK_{1-x}NbO₃ piezo-bioceramics *Biomaterials Advances* **140** 213042
- [43] Khare D, Basu B and Dubey A K 2020 Electrical stimulation and piezoelectric biomaterials for bone tissue engineering applications *Biomaterials* **258** 120280
- [44] Dubey A K and Basu B 2014 Pulsed electrical stimulation and surface charge induced cell growth on multistage spark plasma sintered hydroxyapatite-barium titanate piezobiocomposite *Journal of the American Ceramic Society* **97** 481-9
- [45] More N and Kapusetti G 2017 Piezoelectric material—a promising approach for bone and cartilage regeneration *Medical hypotheses* **108** 10-6
- [46] Jacob J, More N, Kalia K and Kapusetti G 2018 Piezoelectric smart biomaterials for bone and cartilage tissue engineering *Inflammation and regeneration* **38** 1-11
- [47] Srirussamee K, Mobini S, Cassidy N J and Cartmell S H 2019 Direct electrical stimulation enhances osteogenesis by inducing Bmp2 and Spp1 expressions from macrophages and preosteoblasts *Biotechnology and Bioengineering* **116** 3421-32
- [48] Das K, Bose S and Bandyopadhyay A 2007 Surface modifications and cell–materials interactions with anodized Ti *Acta biomaterialia* **3** 573-85
- [49] Dikici B A, Dikici S, Karaman O and Oflaz H 2017 The effect of zinc oxide doping on mechanical and biological properties of 3D printed calcium sulfate based scaffolds *Biocybernetics and Biomedical Engineering* **37** 733-41

- [50] Webb K, Hlady V and Tresco P A 1998 Relative importance of surface wettability and charged functional groups on NIH 3T3 fibroblast attachment, spreading, and cytoskeletal organization *Journal of Biomedical Materials Research: An Official Journal of The Society for Biomaterials, The Japanese Society for Biomaterials, and the Australian Society for Biomaterials* **41** 422-30
- [51] Srinath P, Abdul Azeem P and Venugopal Reddy K 2020 Review on calcium silicate-based bioceramics in bone tissue engineering *International Journal of Applied Ceramic Technology* **17** 2450-64
- [52] Wu T, Lu T, Shi H, Wang J and Ye J 2023 Enhanced osteogenesis, angiogenesis and inhibited osteoclastogenesis of a calcium phosphate cement incorporated with strontium doped calcium silicate bioceramic *Ceramics International* **49** 6630-45
- [53] Pietak A M, Reid J W, Stott M J and Sayer M 2007 Silicon substitution in the calcium phosphate bioceramics *Biomaterials* **28** 4023-32
- [54] Maeno S, Niki Y, Matsumoto H, Morioka H, Yatabe T, Funayama A, Toyama Y, Taguchi T and Tanaka J 2005 The effect of calcium ion concentration on osteoblast viability, proliferation and differentiation in monolayer and 3D culture *Biomaterials* **26** 4847-55
- [55] Maehira F, Miyagi I and Eguchi Y 2009 Effects of calcium sources and soluble silicate on bone metabolism and the related gene expression in mice *Nutrition* **25** 581-9

Bibliography

- [1] Song M E, Kim J S, Joung M R, Nahm S, Kim Y S, Paik J H and Choi B H 2008 Synthesis and microwave dielectric properties of MgSiO₃ ceramics *Journal of the American ceramic Society* **91** 2747-50
- [2] Kanzaki M and Xue X 2017 Protoenstatite in MgSiO₃ samples prepared by conventional solid state reaction *Journal of Mineralogical and Petrological Sciences* **112** 359-64
- [3] Dubey A K, Yamada H and Kakimoto K-i 2013 Space charge polarization induced augmented in vitro bioactivity of piezoelectric (Na, K) NbO₃ *Journal of Applied Physics* **114**
- [4] Serena E, Figallo E, Tandon N, Cannizzaro C, Gerecht S, Elvassore N and Vunjak-Novakovic G 2009 Electrical stimulation of human embryonic stem cells: cardiac differentiation and the generation of reactive oxygen species *Experimental cell research* **315** 3611-9
- [5] Tan G, Wang S, Zhu Y, Zhou L, Yu P, Wang X, He T, Chen J, Mao C and Ning C 2016 Surface-selective preferential production of reactive oxygen species on piezoelectric ceramics for bacterial killing *ACS applied materials & interfaces* **8** 24306-9
- [6] Belenky P, Jonathan D Y, Porter C B, Cohen N R, Lobritz M A, Ferrante T, Jain S, Korry B J, Schwarz E G and Walker G C 2015 Bactericidal antibiotics induce toxic metabolic perturbations that lead to cellular damage *Cell reports* **13** 968-80
- [7] Murphy M P, Holmgren A, Larsson N-G, Halliwell B, Chang C J, Kalyanaraman B, Rhee S G, Thornalley P J, Partridge L and Gems D 2011 Unraveling the biological roles of reactive oxygen species *Cell metabolism* **13** 361-6

- [8] Chen X, Tian X, Shin I and Yoon J 2011 Fluorescent and luminescent probes for detection of reactive oxygen and nitrogen species *Chemical Society Reviews* **40** 4783-804
- [9] Aebi H and Suter H 1966 On the peroxide sensitivity of acatalasie erythrocytes *Humangenetik* **2** 328-43
- [10] Shin S-Y and Park J-H 1997 Activities of oxidative enzymes related with oxygen tolerance in Bifidobacterium sp *Journal of Microbiology and Biotechnology* **7** 356-9
- [11] Gregory E M and Fanning D D 1983 Effect of heme on Bacteroides distasonis catalase and aerotolerance *Journal of bacteriology* **156** 1012-8
- [12] Beveridge T J 1999 Structures of gram-negative cell walls and their derived membrane vesicles *Journal of bacteriology* **181** 4725-33
- [13] Siddique M N, Faizan M, Riyajuddin S, Tripathi P, Ahmad S and Ghosh K 2021 Intrinsic structural distortion assisted optical and magnetic properties of orthorhombic rare-earth perovskite La_{1-x}EuxCrO₃: Effect of t-e hybridization *Journal of Alloys and Compounds* **850** 156748
- [14] Keyer K, Gort A S and Imlay J A 1995 Superoxide and the production of oxidative DNA damage *Journal of bacteriology* **177** 6782-90
- [15] Sonohara R, Muramatsu N, Ohshima H and Kondo T 1995 Difference in surface properties between Escherichia coli and Staphylococcus aureus as revealed by electrophoretic mobility measurements *Biophysical chemistry* **55** 273-7
- [16] Singh A and Dubey A K 2018 Various biomaterials and techniques for improving antibacterial response *ACS Applied Bio Materials* **1** 3-20
- [17] Swain S, Padhy R N and Rautray T R 2020 Polarized piezoelectric bioceramic composites exhibit antibacterial activity *Materials Chemistry and Physics* **239** 122002

- [18] Kumar S, Vaish R and Powar S 2018 Surface-selective bactericidal effect of poled ferroelectric materials *Journal of Applied Physics* **124** 014901
- [19] Singh A, Reshma K and Dubey A K 2020 Combined effect of surface polarization and ZnO addition on antibacterial and cellular response of Hydroxyapatite-ZnO composites *Materials Science and Engineering: C* **107** 110363
- [20] Dubey A K and Basu B 2014 Pulsed electrical stimulation and surface charge induced cell growth on multistage spark plasma sintered hydroxyapatite-barium titanate piezobiocomposite *Journal of the American Ceramic Society* **97** 481-9
- [21] Harkes G, Feijen J and Dankert J 1991 Adhesion of Escherichia coli on to a series of poly(methacrylates) differing in charge and hydrophobicity *Biomaterials* **12** 853-60
- [22] Kodjikian L, Burillon C, Roques C, Pellon G, Freney J and Renaud F N 2003 Bacterial adherence of Staphylococcus epidermidis to intraocular lenses: a bioluminescence and scanning electron microscopy study *Investigative ophthalmology & visual science* **44** 4388-94
- [23] Okada A, Nikaïdo T, Ikeda M, Okada K, Yamauchi J, Foxton R M, Sawada H, Tagami J and Matin K 2008 Inhibition of Biofilm Formation using Newly Developed Coating Materials with Self-cleaning Properties *Dental Materials Journal* **27** 565-72
- [24] Khare D, Singh A and Dubey A K 2021 Influence of Na and K contents on the antibacterial response of piezoelectric biocompatible $\text{Na}_x\text{K}_{1-x}\text{NbO}_3$ ($x= 0.2-0.8$) *Materials Today Communications* **27** 102317
- [25] Ehrensberger M T, Tobias M E, Nodzo S R, Hansen L A, Luke-Marshall N R, Cole R F, Wild L M and Campagnari A A 2015 Cathodic voltage-controlled electrical stimulation of titanium implants as treatment for methicillin-resistant Staphylococcus aureus periprosthetic infections *Biomaterials* **41** 97-105

- [26] Xie Y and Yang L 2016 Calcium and magnesium ions are membrane-active against stationary-phase *Staphylococcus aureus* with high specificity *Scientific reports* **6** 20628
- [27] Jangra S L, Stalin K, Dilbaghi N, Kumar S, Tawale J, Singh S P and Pasricha R 2012 Antimicrobial activity of zirconia (ZrO₂) nanoparticles and zirconium complexes *Journal of nanoscience and nanotechnology* **12** 7105-12
- [28] Kim S-H, Lee H-S, Ryu D-S, Choi S-J and Lee D-S 2011 Antibacterial activity of silver-nanoparticles against *Staphylococcus aureus* and *Escherichia coli* *Microbiology and Biotechnology Letters* **39** 77-85

Bibliography

- [1] Cullity B D 1956 *Elements of X-ray Diffraction*: Addison-Wesley Publishing)
- [2] Londoño-Restrepo S M, Jeronimo-Cruz R, Millán-Malo B M, Rivera-Muñoz E M and Rodríguez-García M E 2019 Effect of the nano crystal size on the X-ray diffraction patterns of biogenic hydroxyapatite from human, bovine, and porcine bones *Scientific reports* **9** 5915
- [3] Choi C K 2010? Comparison between SiOC Thin Film by plasma enhance chemical vapor deposition and SiO₂ Thin Film by Fourier Transform Infrared Spectroscopy? *Journal of the Korean Physical Society* **56** 1150-5
- [4] Vancea C, Mihailescu M, Negrea A, Mosoarca G, Ciopec M, Duteanu N, Negrea P and Minzatu V 2020 Batch and fixed-bed column studies on palladium recovery from acidic solution by modified MgSiO₃ *International Journal of Environmental Research and Public Health* **17** 9500
- [5] Sagadevan S, Venilla S, Marlinda A, Johan M, Wahab Y A, Zakaria R, Umar A, Hegazy H H, Algarni H and Ahmad N 2020 Effect of synthesis temperature on the morphologies, optical and electrical properties of MgO nanostructures *Journal of nanoscience and nanotechnology* **20** 2488-94
- [6] Kumar P, Dehiya B S, Sindhu A, Kumar R, Pruncu C I and Yadav A 2020 Fabrication and characterization of silver nanorods incorporated calcium silicate scaffold using polymeric sponge replica technique *Materials & Design* **195** 109026
- [7] El Hilaly J, Israili Z H and Lyoussi B 2004 Acute and chronic toxicological studies of *Ajuga iva* in experimental animals *Journal of ethnopharmacology* **91** 43-50
- [8] Bailey S A, Zidell R H and Perry R W 2004 Relationships between organ weight and body/brain weight in the rat: what is the best analytical endpoint? *Toxicologic pathology* **32** 448-66

- [9] Buesen R, Landsiedel R, Sauer U G, Wohlleben W, Groeters S, Strauss V, Kamp H and van Ravenzwaay B 2014 Effects of SiO₂, ZrO₂, and BaSO₄ nanomaterials with or without surface functionalization upon 28-day oral exposure to rats *Archives of toxicology* **88** 1881-906
- [10] Kaplan M M and Righetti A 1970 Induction of rat liver alkaline phosphatase: the mechanism of the serum elevation in bile duct obstruction *The Journal of clinical investigation* **49** 508-16
- [11] Gawlik Z, Fiejka E, Aleksandrowicz R and Wiśniewska I 1978 Activity of alkaline phosphatase in the healing rat liver after hepatectomy *Folia Histochemica et Cytochemica* **16** 343-9
- [12] Wright T M and Vandenberg A M 2007 Risperidone-and quetiapine-induced cholestasis *Annals of Pharmacotherapy* **41** 1518-23
- [13] Singh A, Bhat T and Sharma O 2011 Clinical biochemistry of hepatotoxicity *J Clin Toxicol S* **4** 2161-0495
- [14] Panda N 1999 Kidney in: Textbook of Biochemistry and Human biology *Prentise Hall India* 290-6
- [15] Chan P, O'hara G and Hayes A W 1982 Principles and methods for acute and subchronic toxicity *Principles and methods of toxicology* **12** 17-9
- [16] Adefemi O, Elujoba A and Odesanmi W 1988 Evaluation of the toxicity potential of Cassia podocarpa with reference to official Senna *West Afr J Pharmacol Drug Res* **8** 41-8
- [17] Oh R C and Hustead T R 2011 Causes and evaluation of mildly elevated liver transaminase levels *American family physician* **84** 1003-8

- [18] Ene-ojo A S, Chinedu E A and Yakasai F M 2013 Toxic Effects of Sub-Chronic Administration of Chloroform Extract of *Artemisia maciverae* Linn on the Kidney of Swiss Albino Rats
- [19] Timonen K L, Vanninen E, De Hartog J, Ibald-Mulli A, Brunekreef B, Gold D R, Heinrich J, Hoek G, Lanki T and Peters A 2006 Effects of ultrafine and fine particulate and gaseous air pollution on cardiac autonomic control in subjects with coronary artery disease: the ULTRA study *Journal of exposure science & environmental epidemiology* **16** 332-41
- [20] Rich D Q, Zareba W, Beckett W, Hopke P K, Oakes D, Frampton M W, Bisognano J, Chalupa D, Bausch J and O'Shea K 2012 Are ambient ultrafine, accumulation mode, and fine particles associated with adverse cardiac responses in patients undergoing cardiac rehabilitation? *Environmental health perspectives* **120** 1162-9
- [21] Peters A, Hampel R, Cyrys J, Breitner S, Geruschkat U, Kraus U, Zareba W and Schneider A 2015 Elevated particle number concentrations induce immediate changes in heart rate variability: a panel study in individuals with impaired glucose metabolism or diabetes *Particle and fibre toxicology* **12** 1-11
- [22] Brook R D, Brook J R, Urch B, Vincent R, Rajagopalan S and Silverman F 2002 Inhalation of fine particulate air pollution and ozone causes acute arterial vasoconstriction in healthy adults *Circulation* **105** 1534-6
- [23] Hamanaka R B and Mutlu G M 2018 Particulate matter air pollution: effects on the cardiovascular system *Frontiers in endocrinology* **9** 680
- [24] Wang J-X, Fan Y-B, Gao Y, Hu Q-H and Wang T-C 2009 TiO₂ nanoparticles translocation and potential toxicological effect in rats after intraarticular injection *Biomaterials* **30** 4590-600

- [25] Ding T, Xue Y, Lu H, Huang Z and Sun J 2012 Effect of particle size of hydroxyapatite nanoparticles on its biocompatibility *IEEE transactions on nanobioscience* **11** 336-40
- [26] Ibrahim K E, Al-Mutary M G, Bakhiet A O and Khan H A 2018 Histopathology of the liver, kidney, and spleen of mice exposed to gold nanoparticles *Molecules* **23** 1848
- [27] Yan G, Huang Y, Bu Q, Lv L, Deng P, Zhou J, Wang Y, Yang Y, Liu Q and Cen X 2012 Zinc oxide nanoparticles cause nephrotoxicity and kidney metabolism alterations in rats *Journal of Environmental Science and Health, Part A* **47** 577-88
- [28] Noori A, Karimi F, Fatahian S and Yazdani F 2014 Effects of zinc oxide nanoparticles on renal function in mice *International Journal of Biosciences (IJB)* **5** 140-6
- [29] Lipka J, Semmler-Behnke M, Sperling R A, Wenk A, Takenaka S, Schleh C, Kissel T, Parak W J and Kreyling W G 2010 Biodistribution of PEG-modified gold nanoparticles following intratracheal instillation and intravenous injection *Biomaterials* **31** 6574-81
- [30] Husain M, Wu D, Saber A T, Decan N, Jacobsen N R, Williams A, Yauk C L, Wallin H, Vogel U and Halappanavar S 2015 Intratracheally instilled titanium dioxide nanoparticles translocate to heart and liver and activate complement cascade in the heart of C57BL/6 mice *Nanotoxicology* **9** 1013-22
- [31] Modrzynska J, Mortensen A, Berthing T, Ravn-Haren G, Szarek J, Saber A T and Vogel U 2021 Effect on mouse liver morphology of CeO₂, TiO₂ and carbon black nanoparticles translocated from lungs or deposited intravenously *Applied Nano* **2** 222-41

- [32] Abdelhalim M A K and Jarrar B M 2011 Gold nanoparticles administration induced prominent inflammatory, central vein intima disruption, fatty change and Kupffer cells hyperplasia *Lipids in health and disease* **10** 1-6
- [33] Abdelhalim M A K and Jarrar B M 2011 Gold nanoparticles induced cloudy swelling to hydropic degeneration, cytoplasmic hyaline vacuolation, polymorphism, binucleation, karyopyknosis, karyolysis, karyorrhexis and necrosis in the liver *Lipids in Health and Disease* **10** 1-6
- [34] Abdelhalim M A K 2011 Gold nanoparticles administration induces disarray of heart muscle, hemorrhagic, chronic inflammatory cells infiltrated by small lymphocytes, cytoplasmic vacuolization and congested and dilated blood vessels *Lipids in health and disease* **10** 1-9
- [35] Sheikh Z, Brooks P J, Barzilay O, Fine N and Glogauer M 2015 Macrophages, foreign body giant cells and their response to implantable biomaterials *Materials* **8** 5671-701
- [36] Xia Z and Triffitt J T 2006 A review on macrophage responses to biomaterials *Biomedical materials* **1** R1
- [37] Sergijenko A, Roelofs A J, Riemen A H and De Bari C 2016 Bone marrow contribution to synovial hyperplasia following joint surface injury *Arthritis Research & Therapy* **18** 1-11
- [38] Asif Amin M, Fox D A and Ruth J H 2017 Synovial cellular and molecular markers in rheumatoid arthritis. In: *Seminars in immunopathology*: Springer) pp 385-93
- [39] Burke C J, Alizai H, Beltran L S and Regatte R R 2019 MRI of synovitis and joint fluid *Journal of Magnetic Resonance Imaging* **49** 1512-27
- [40] Lerouge S, Huk O, Yahia L H and Sedel L 1996 Characterization of in vivo wear debris from ceramic—ceramic total hip arthroplasties *Journal of Biomedical*

Materials Research: An Official Journal of The Society for Biomaterials and The Japanese Society for Biomaterials **32** 627-33

- [41] Hatton A, Nevelos J, Nevelos A, Banks R, Fisher J and Ingham E 2002 Alumina–alumina artificial hip joints. Part I: a histological analysis and characterisation of wear debris by laser capture microdissection of tissues retrieved at revision *Biomaterials* **23** 3429-40
- [42] Margevicius K J, Bauer T W, McMahon J T, Brown S A and Merritt K 1994 Isolation and characterization of debris in membranes around total joint prostheses *JBJS* **76** 1664-75
- [43] Yang S-Y, Ren W, Park Y, Sieving A, Hsu S, Nasser S and Wooley P H 2002 Diverse cellular and apoptotic responses to variant shapes of UHMWPE particles in a murine model of inflammation *Biomaterials* **23** 3535-43
- [44] Thrivikraman G, Madras G and Basu B 2014 In vitro/in vivo assessment and mechanisms of toxicity of bioceramic materials and its wear particulates *RSC Advances* **4** 12763-81

List of Publications

1. **Priya Singh**, Xiaojun Yu, Alok Kumar, and Ashutosh Kumar Dubey, Recent advances in silicate-based crystalline bioceramics for orthopaedic applications: A review, *Journal of Materials Science*, 57 (10), (2022).
2. **Priya Singh**, and Ashutosh Kumar Dubey. "Accelerated Osteogenic Response of Electrostatically Stimulated $\text{Mg}_{1-x}\text{Ca}_x\text{Si}_{1-x}\text{Zr}_x\text{O}_3$ ($x= 0-0.4$) Bioelectrets. *ACS Biomaterials Science & Engineering*, 9, 6293-6308 (2023).
3. **Priya Singh**, and Ashutosh Kumar Dubey. " Electret-induced antibacterial response of $\text{Mg}_{1-x}\text{Ca}_x\text{Si}_{1-x}\text{Zr}_x\text{O}_3$ ($x= 0-0.4$) bioceramics." *Journal of the American Ceramic Society*, 107, 4263-4281, (2024).
4. Sugimoto H., Biggemann J., Fey T., **Priya Singh**, Khare D., Dubey A. K., Kakimoto Ken-ichi, Lead-free piezoelectric (Ba,Ca)(Ti,Zr)O₃ scaffolds for enhanced antibacterial property, *Materials Letters*, 297, 129969, (2021).
5. Khare D., **Priya Singh**., Dubey A. K., Interplay of surface polarization charge, dynamic electrical stimulation and compositional modification towards accelerated osteogenic response of $\text{Na}_x\text{K}_{1-x}\text{NbO}_3$ piezo-bioceramics, *Biomaterials Advances*, 140, 213042, (2022).
6. A. Singh, **Priya Singh** and A. K. Dubey, Effect of Incorporation of Piezoelectric Phases on Antibacterial and Cellular Response of Borate Bioactive Glass, *Open Ceramics*, 9, 100234, (2022).
7. Singh, Satyendra Kumar, Jitendra Kumar, **Priya Singh**, S. K. Rajput, Ashutosh Kumar Dubey, Ram Pyare, and P. K. Roy. "Impact of 13-93 bio-glass inclusion on the

- machinability, in-vitro degradation, and biological behavior of Y-TZP-based bioceramic composite, *Ceramics International*, 50, 1087-1106, (2023).
8. Rai, Kshama, Kanchan Yadav, Megha Das, Shilpi Chaudhary, Kaustubh Naik, **Priya Singh**, Ashutosh Kumar Dubey, Sanjeev Kumar Yadav, Shashi Bhushan Agrawal, and Avanish Singh Parmar. "Effect of carbon quantum dots derived from extracts of UV-B-exposed *Eclipta alba* on alcohol-induced liver cirrhosis in Golden Hamster." *Photochemical & Photobiological Sciences*, 22, 1543-1559, (2023).
 9. Yadav, Akhilesh Kumar, Himanshu Tripathi, Aiswarjya Bastia, **Priya Singh**, Ashutosh Kumar Dubey, N. S. Anuraag, N. K. Prasad, and Chandana Rath. "Synergistic effect of CoFe₂O₄-85S nano bio-glass composites for hyperthermia and controlled drug delivery." *Materialia* 32, 101884, (2023).
 10. Akhilesh Kumar Yadav, M.Sc.; Himanshu Tripathi, Ph.D.; Sanjna Rajput, M.Sc.; **Priya Singh**; Ashutosh Kumar Dubey, Ph.D.; Krishan Kumar; Ruchi Chawla, "Drug kinetics and antimicrobial properties of quaternary bioactive glasses 81S(81SiO₂-(16-x)-2P₂O₅-1Na₂O-xMgO; An in-vitro study", *Biomaterials Advances*, 157(10):213729 (2023).
 11. S. Rani, S. Bandyopadhyay-Ghosh, G. Liu, Priya Singh, Ashutosh Kumar Dubey, G. Liu, Thermally exfoliated graphene oxide doped microporous bio-nanocomposite hydrogel: A promising substrate for biomedical application, *International Journal of Hydrogen Energy*, (2024).
 12. Singh, S.K., Mahapatra, D., **Priya Singh**., Dubey, A.K., Pyare, R. and Roy, P.K., "Investigate the influence of bio-glass additive on the machinability, mechanical and biological response of Mg-PSZ-based biocomposites" *Ceramics International*, 50, 18238-18257, (2024).

- 13.** Akhilesh Kumar Yadav, M.Sc.; **Priya Singh**; Ashutosh Kumar Dubey, Ph.D.; Chandana Rath, Ph.D. Dr. Himanshu Tripathi, Exploring the Physicomechanical Properties and Biocompatibility Traits of CuO Substituted 45S5 Bioactive Glass through In-Vitro Analysis, *Journal of Surfaces and Interfaces*, 51, 104524, (2024).
- 14. Priya Singh, and** Ashutosh Kumar Dubey, Biocompatibility of Ca and Zr doped MgSiO₃ nano powder, *in vivo*, (to be submitted).
- 15.** Singh, Satyendra Kumar, Jitendra Kumar, **Priya Singh**, S. K. Rajput, Ashutosh Kumar Dubey, Ram Pyare, and P. K. Roy. "Evaluation of the machinability and enhancement of biological response of ZTA- based 13-93 bioglass composite material", (Submitted to Journal).