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Area of Research

Cancer Nanotechnology,
Biomaterials,
Tissue engineering,
Biosensor,
Nano-remediation

Sponsored Research Project

Sl. No.	Title of Project	Funding Agency	Amount (Rupees)	Duration
1	Chitosan as nanocarrier for gene delivery	MHRD, India	5,00,000.00	3 years (2011-2014) Project Investigator Completed
2	<i>Cancer Nanotheranostics</i> : Development of Multifunctional Nanocomposite for Tumor Targeted Delivery of Suicide Gene and Imaging Probe.	DBT (RGYI - 2011-12), India	29,30,000.00	3 years (2012-2015) Project Investigator Completed
3	Tumor targeted multifunctional chitosan nanocomposite for cancer theranostic applications.	SERB (Fast track scheme for young scientists)	21,90,000.00	3 years (2012-2015) Project Investigator Completed
4	Development of Ni-P-ZnO Nanocomposite Coatings for Antibacterial and Anticorrosion Applications	USBD (Novel Research Ideas in Biotechnology), India	6,10,000.00	2 years (2012-2014) Co-Project Investigator Completed
5	Low Cost Technology for Purification of Arsenic and Microbes Contaminated Water using Nanotechnology	DST-Water Technology Initiative, India	46,63,875.00	2 years (2013-2016) Project Investigator Completed

6	Cloning and targeted delivery of anti-oxidant gene and drug for treatment of Chronic Obstructive Pulmonary Disease (COPD)	DST-RFBR (Indo-Russia)	25,01,840.00	2 years (2016-2018) Project Investigator Ongoing
7	Development of Tumor Targeted Multifunctional Calcium Phosphate Nanocarrier for gene-directed enzyme prodrug therapy (GDEPT)	DST-WOS-A	32,20,000.00	3 years (2016-2019) Mentor Ongoing
8	Modulation of Connexin-43 and Histone Deacetylase to Comprehend Cancer Therapy	DBT-North East Twinning Program 2017-18	26,79,040.00	3 years Project Investigator (Approved--- yet to receive fund)
9	Targeted multi-functional microspheres and nanofibers for cartilage regeneration	DBT Biocare	45,35,000.00	3 years Mentor (Approved--- yet to receive fund)
10	Overexpression of Superoxide Dismutase in Mesenchymal Stem Cells for Therapeutic Applications of Chronic Obstructive Pulmonary Disease.	ICMR, India	28,87,500.00	3 years Project Investigator (Approved--- yet to receive fund)

List of publications (*Corresponding author)

1. M.C. Ramkumar, K.N. Pandiyaraj, A. ArunKumar, P.V.A. Padmanabhan, S. Uday Kumar, **P. Gopinath**, A. Bendavid, P. Cools, N. De Geyter, R. Morent, R.R. Deshmukh. Evaluation of mechanism of cold atmospheric pressure plasma assisted polymerization of acrylic acid on low density polyethylene (LDPE) film surfaces: Influence of various gaseous plasma pretreatment. [*Applied Surface Science*](#), 2018, (*in press*) (**IF=3.387**)
2. Sauraj, S. Uday Kumar, Vinay kumar, Ruchir Priyadarshi, **P. Gopinath**, Yuvraj Singh Negi. pH responsive prodrug nanoparticles based on xylan-curcumin conjugate for the efficient delivery of curcumin in cancer therapy. [*Carbohydrate Polymers*](#), **2018**, 188,252-259 (**IF=4.811**)
3. U. Sah, K.Sharma, N. Chaudhari, M. Sankar* and **P. Gopinath***. Antimicrobial Photodynamic Therapy: Single-walled carbon nanotube (SWCNT)-porphyrin conjugate for visible light mediated

- inactivation of *Staphylococcus aureus*. [*Colloids and Surfaces B: Biointerfaces*](#), **2018**, 162, 108-117 (***IF=3.887***)
4. P.Dubey and **P.Gopinath***. Enhanced targeted anticancer potential of AKT-1 siRNA, an inhibitor of Protein Kinase B, in combination with silver nanoparticle against non-small cell lung adenocarcinoma. [*Nano-Structures & Nano-Objects*](#). **2018**,14,106-109.
 5. N. Singh, A. Sachdev and **P. Gopinath***, Polysaccharide functionalized single walled carbon nanotubes as nanocarriers for delivery of curcumin in lung cancer cells. [*Journal of Nanoscience and Nanotechnology*](#), **2018**, 18, 1534-1541(***IF=1.483***)
 6. S.Uday Kumar, B. Bhushan, and **P.Gopinath***. Bioactive carbon dots lights up microtubules and destabilises cell cytoskeletal framework - a robust imaging agent with therapeutic activity. [*Colloids and Surfaces B: Biointerfaces*](#), **2017**, 159,662-672. (***IF=3.887***) featured in “**[NATURE INDIA](#)**” and “**[ATLAS of Science](#)**”
 7. Bharat Bhushan, Vitaly Khanadeev, Boris Khlebtsov, Nikolai Khlebtsov and **P. Gopinath***. Impact of albumin based approaches in nanomedicine: Imaging, targeting and drug delivery. [*Advances in Colloid and Interface Science*](#), **2017**,246, 13-39.(***IF=7.223***)
 8. S.Raj Kumar, S. Mohiyuddin, **P.Gopinath***. Electrospun Polyacrylonitrile (PAN) templated 2D nanofibrous mats: A platform towards practical applications for the dye removal and bacterial disinfection. [*ACS Omega*](#). **2017**, 2, 6556–6569.
 9. S. Naqvi, S. Mohiyuddin, **P.Gopinath***. Niclosamide loaded biodegradable chitosan nanocargoes: an in vitro study for the potential application in cancer therapy. [*Royal Society Open Science*](#). **2017**, 4, 170611.
 10. A.Saini, K. R.Justin Thomas, A. Sachdev and **P.Gopinath**. Photophysics, electrochemistry, morphology and bioimaging applications of new 1,8-naphthalimide derivatives containing different chromophores. [*Chemistry – An Asian Journal*](#), **2017**,12, 2612–2622 (***IF=4.083***)
 11. M.C.Ramkumar, K.N. Pandiyaraj, A.Arun Kumar, P.V.A.Padmanabhan, P. Cools, N. De Geyter, R. Morent, S.Uday Kumar, Vinay Kumar, **P.Gopinath**, S. K.Jaganathan, R.R. Deshmukh. Atmospheric pressure non-thermal plasma assisted polymerization of poly (ethylene glycol) methylether methacrylate (PEGMA) on low density polyethylene (LDPE) films for enhancement of biocompatibility. [*Surface and Coatings Technology*](#), **2017**,329, 55-67 (***IF=2.589***)
 12. S. Aiswarya Devi, M. Harshiny, S.Uday Kumar, **P.Gopinath**, M.Matheswaran. Strategy of metal iron doping and green mediated ZnO nanoparticles: dissolubility, antimicrobial and cytotoxic traits. [*Toxicology Research*](#), **2017** (DOI: 10.1039/C7TX00093F) (***IF=1.969***)

13. K.Navaneetha Pandiyaraj, A.Arun Kumar , M.C.RamKumar, S.Uday Kumar, **P.Gopinath**, Pieter Cools, N. De Geyter, R. Morent, M. Bah, S. Ismat Shah, Pi-Guey Su, R.R. Deshmukh. Effect of processing parameters on the deposition of SiO_x-like coatings on the surface of polypropylene films using glow discharge plasma assisted polymerization for tissue engineering applications. [*Vacuum*](#), **2017**,143, 412-422. **(IF=1.530)**
14. D. Malwal and **P. Gopinath***. Silica stabilized magnetic-chitosan beads for removal of arsenic from water. [*Colloid and Interface Science Communications*](#), **2017**, 19, 14-19
15. D. Malwal and **P. Gopinath***.CuO-ZnO nanosheets with p-n heterojunction for enhanced visible light mediated photocatalytic activity. [*ChemistrySelect*](#), **2017**, 2, 4866–4873
16. B. Tirkey, B. Bhushan, S.Uday Kumar and **P.Gopinath***. Prodrug encapsulated albumin nanoparticles as an alternative approach to manifest anti-proliferative effects of suicide gene therapy. [*Materials Science & Engineering C*](#), **2017**, 73, 507–515 **(IF=4.164)**
17. Sauraj, S.Uday Kumar, **P.Gopinath**, Y.S. Negi. Synthesis and bio-evaluation of xylan-5-fluorouracil-1-acetic acid conjugates as prodrugs for colon cancer treatment. [*Carbohydrate Polymers*](#), **2017**, 157, 1442–1450 **(IF=4.811)**
18. N. Pal, P.Dubey, **P.Gopinath**, K. Pal. Combined effect of cellulose nanocrystal and reduced graphene oxide into poly-lactic acid matrix nanocomposite as a scaffold and its anti-bacterial activity. [*International Journal of Biological Macromolecules*](#), **2017**, 95, 94–105 **(IF=3.671)**
19. S.Raj Kumar and **P. Gopinath***, *In situ* synthesis of chitosan coated silver-zinc oxide nanocomposites and its enhanced antibacterial properties. [*Journal of Nanoscience and Nanotechnology*](#), **2017**, 17, 8797–8805 **(IF=1.483)**
20. D. Malwal and **P.Gopinath***. Efficient adsorption and antibacterial properties of electrospun CuO-ZnO composite nanofibers for water remediation. [*Journal of Hazardous Materials*](#), **2017**, 321, 611–621 **(IF=6.065)**
21. D. Malwal and **P. Gopinath***, Rapid and efficient removal of arsenic from water using electrospun CuO-ZnO composite nanofibers. [*RSC Advances*](#), **2016**, 6, 115021-115028 **(IF=3.108)**
22. S.Raj Kumar and **P. Gopinath***, Dual applications of silver nanoparticles incorporated functionalized MWCNTs grafted surface modified PAN nanofibrous membrane for water purification. [*RSC Advances*](#), **2016**, 6, 109241 - 109252 **(IF=3.108)**
23. P.Dubey and **P.Gopinath***. Functionalized Graphene Oxide based Nanocarrier for Tumor-Targeted Combination Therapy to Elicit Enhanced Cytotoxicity against Breast Cancer cells in vitro. [*ChemistrySelect*](#), **2016**, 1, 4845 – 4855.

24. P.Dubey and **P.Gopinath***. PEGylated Graphene Oxide based Nanocomposite grafted Chitosan/Polyvinyl alcohol Nanofiber as an Advanced Antibacterial Wound Dressing. [*RSC Advances*](#), **2016**, 6, 69103-69116 (**IF=3.108**)
25. B.Bhushan, S.Nandhagopal, R.Rajesh Kannan and **P.Gopinath***. Therapeutic Nanozyme: Antioxidative and cytoprotective effects of nanoceria against hydrogen peroxide induced oxidative stress in fibroblast cells and in zebrafish. [*ChemistrySelect*](#), **2016**, 1, 2849 – 2856
26. B. Bhushan, S.Uday Kumar and **P.Gopinath***. Multifunctional carbon dots as efficient fluorescent nanotags for tracking cells through successive generations. [*Journal of Materials Chemistry B*](#), **2016**, 4, 4862-4871 (**IF=4.543**)
27. B.Bhushan,S.Nandhagopal, R.Rajesh Kannan and **P.Gopinath***. Biomimetic nanomaterials: Development of protein coated nanoceria as a potential antioxidative nano-agent for the effective scavenging of reactive oxygen species in vitro and in zebrafish model. [*Colloids and Surfaces B: Biointerfaces*](#), **2016**, 146, 375–386(**IF=3.887**)
28. S. Uday Kumar and **P.Gopinath***. Field-actuated Antineoplastic Potential of Smart and Versatile PEO-bPEI Electrospun Scaffold by Multi-staged Targeted Co-delivery of Magnetite Nanoparticles and Niclosamide-bPEI Complexes. [*RSC Advances*](#), **2016**,6,46186-46201 (**IF=3.108**)
29. K.Navaneetha Pandiyaraj, P.V.A.Padmanabhan, A.Arun, M.C.RamKumar, R.R.Deshmukh, Avi Bendavid, Pi-G Su, A.Sachdev, **P.Gopinath**. Cold atmospheric pressure (CAP) plasma assisted tailoring of LDPE film surfaces for enhancement of adhesive and cytocompatible properties: Influence of operating parameters. [*Vacuum*](#), **2016**, 130,34-47 (**IF=1.530**)
30. P.Dubey and **P.Gopinath***. Nanocarriers for AKT siRNA based gene therapy. [*Austin Journal of Biotechnology & Bioengineering*](#). **2016**, 3(2), 1061 **Editorial**
31. S. Uday Kumar and **P.Gopinath***. Nanotechnology- A Promising Approach for Suicide Gene Therapy. [*Austin Journal of Nanomedicine & Nanotechnology*](#). **2016**, 4(1), 1042. **Editorial**
32. B.Bhushan and **P.Gopinath***. Nano-Enabled Approaches for Lung Cancer Therapy. [*Austin Journal of Lung Cancer Research*](#). **2016**, 1(2), 1008. **Editorial**
33. K.Navaneetha Pandiyaraj, A. Arun Kumar M.C.Ram Kumar, R.R.Deshmukh, Avi Bendavid , Pi-Guey Su, S.Uday Kumar, **P.Gopinath**. Effect of cold atmospheric pressure plasma gas composition on the surface and cyto-compatible properties of low density polyethylene (LDPE) film. [*Current Applied Physics*](#), **2016**, 16,784-792 (**IF=1.971**)
34. D. Malwal and **P.Gopinath***. Enhanced photocatalytic activity of hierarchical three dimensional metal oxide@CuO nanostructures towards the degradation of Congo red dye under solar radiations. [*Catalysis Science & Technology*](#) , **2016**,6, 4458-4472 (**IF=5.773**)

35. I. Matai and **P.Gopinath***. Hydrophobic Myristic acid Modified PAMAM Dendrimers Augments the Delivery of Tamoxifen to Breast Cancer Cells. [*RSC Advances*](#), **2016**, 6,24808-24819 (**IF=3.108**)
36. K.N.Pandiyaraj, A.Arun Kumar, M.C.Ramkumar, A.Sachdev, **P.Gopinath**, Pieter Cools, N. De Geyter, R. Morent, R.R.Deshmukh, M.N. Nadagouda. Influence of non-thermal TiCl₄/Ar+O₂ plasma-assisted TiO_x based coatings on the surface of polypropylene (PP) films for the tailoring of surface properties and cytocompatibility. [*Materials Science and Engineering C*](#), **2016**, 62, 908–918 (**IF=4.164**)
37. A. Sachdev, I. Matai and **P.Gopinath***. Carbon Dots Incorporated Polymeric Hydrogels as Multifunctional Platform for Imaging and Induction of Apoptosis in Lung Cancer Cells. [*Colloids and Surfaces B: Biointerfaces*](#), **2016**, 141, 242–252 (**IF=3.887**) featured in [**ATLAS of Science**](#)
38. A. Sachdev and **P.Gopinath***. Monitoring the Intracellular Distribution and ROS Scavenging Potential of Carbon dots-Cerium oxide Nanocomposites in Fibroblast Cells. [*ChemNanoMat*](#), **2016**,2, 226–235. (**IF=2.937**)
39. I. Matai and **P.Gopinath***. Chemically Crosslinked Hybrid Nanogels of Alginate and PAMAM Dendrimers as Efficient Anticancer Drug Delivery Vehicles. [*ACS Biomaterials Science & Engineering*](#), **2016**, 2,213–223. (**IF=3.234**)
40. P. Dubey and **P.Gopinath***.Fabrication of electrospun poly (ethylene oxide)-poly (capro lactone) composite nanofibers for co-delivery of niclosamide and silver nanoparticles exhibits enhanced anti-cancer effects in vitro. [*Journal of Materials Chemistry B*](#), **2016**, 4, 726-742 (**IF=4.543**)
41. D. Malwal and **P.Gopinath***. Fabrication and Applications of Ceramic nanofibers in Water Remediation: A review. [*Critical Reviews in Environmental Science and Technology*](#), **2016**,46, 500-534 (**IF=5.790**)
42. R. Manoj Kumar, K. K. Kuntal, S. Singh, P. Gupta, B. Bhushan, **P. Gopinath** and D. Lahiri. Electrophoretic deposition of hydroxyapatite coating on Mg–3Zn alloy for orthopaedic application. [*Surface and Coatings Technology*](#), **2016**,287,82–92 (**IF=2.589**)
43. S. Nayak, B. Bhushan, R. Jayaganthan, **P. Gopinath**, R.D. Agarwal and D.Lahiri. Strengthening of Mg based Alloy through Grain Refinement for Orthopedic Application. [*Journal of the Mechanical Behavior of Biomedical Materials*](#),**2016**,59,57–70 (**IF=3.110**)
44. B. Bhushan and **P.Gopinath***. Tumor-targeted folate-decorated albumin stabilised silver nanoparticle induce apoptosis at low concentration in human breast cancer cells. [*RSC Advances*](#), **2015**,5,86242-86253(**IF=3.108**)

45. S. Uday Kumar and **P.Gopinath***. Bioactive core-shell nanofiber hybrid scaffold for efficient suicide gene transfection and subsequent time resolved delivery of prodrug for anticancer therapy. [*ACS Applied Materials & Interfaces*, 2015, 7, 18717–18731 \(IF= 7.504\)](#) featured in “[NATURE INDIA](#)
46. I. Matai, A. Sachdev and **P.Gopinath***. Self-assembled hybrids of fluorescent carbon dots and PAMAM dendrimers for epirubicin delivery and intracellular imaging. [*ACS Applied Materials & Interfaces*, 2015,7,11423-11435 \(IF= 7.504\)](#)
47. P. Dubey, B. Bhushan, A. Sachdev, I. Matai, S. Uday Kumar and **P.Gopinath***. Silver nanoparticles incorporated composite nanofiber for potential wound dressing applications. [*Journal of Applied Polymer Science*, 2015, 132, 42473. \(Cover page of the issue\) \(IF= 1.866\)](#)
48. P. Dubey, I. Matai, S. Uday Kumar, A. Sachdev, B. Bhushan and **P.Gopinath***. Perturbation of cellular mechanistic system by silver nanoparticles toxicity: cytotoxic, genotoxic and epigenetic potential. [*Advances in Colloid and Interface Science*, 2015, 221:4-21 \(IF=7.223\) \(Highly Accessed\)](#)
49. B. Bhushan and **P.Gopinath***. Antioxidant nanozyme: A facile synthesis and evaluation of reactive oxygen species scavenging potential of nanoceria encapsulated albumin nanoparticles. [*Journal of Materials Chemistry B*, 2015, 3, 4843-4852. \(IF=4.543\)](#)
50. S. Uday Kumar and **P.Gopinath***. Controlled delivery of bPEI-niclosamide complexes by PEO nanofibers and evaluation of its anti-neoplastic potentials. [*Colloids and Surfaces B: Biointerfaces*, 2015, 131:170-81. \(IF=3.887\)](#)
51. A. Sachdev and **P.Gopinath***. Green synthesis of multifunctional carbon dots from coriander leaves and their potential application as antioxidants, sensors and bioimaging agents. [*Analyst*, 2015, 140, 4260-4269. \(IF=3.885\)](#)
52. I. Matai, A. Sachdev and **P.Gopinath***. Multicomponent 5-fluorouracil loaded PAMAM stabilized-silver nanocomposites synergistically induce apoptosis in human cancer cells. [*Biomaterials Science*, 2015,3,457–468 \(Cover page of the issue\) \(IF=4.210\)](#)
53. A.Sachdev, I.Matai and **P.Gopinath***. Dual-functional carbon dots-silver@zinc oxide nanocomposite: *In vitro* evaluation of cellular uptake and apoptosis induction. [*Journal of Materials Chemistry B*, 2015,3,1208–1220 \(Cover page of the issue\) \(IF=4.543\)](#)
54. B. Bhushan, P. Dubey, S. Uday Kumar, A. Sachdev, I. Matai, **P.Gopinath***. Bionanotherapeutics: Niclosamide Encapsulated Albumin Nanoparticles as a Novel Drug Delivery System for Cancer Therapy. [*RSC Advances*, 2015,5,12078–12086 \(IF=3.108\)](#)
55. D. Malwal and **P.Gopinath***. Fabrication and characterization of poly (ethylene oxide) templated nickel oxide nanofibers for dye degradation. [*Environmental Science: Nano*, 2015,2,78–85 \(Top 10 most downloaded articles in 2015\) \(IF= 6.047\)](#)

56. S. Uday Kumar, I. Matai, P. Dubey, B. Bhushan, A. Sachdev and **P.Gopinath***. Differentially cross-linkable core-shell nanofibers for tunable delivery of anticancer drugs: Synthesis, characterization and its anticancer efficacy. [*RSC Advances*](#), **2014**, 4, 38263–38272. (*IF=3.108*)
57. B. Bhushan, S. Uday Kumar, I. Matai, A. Sachdev, P.Dubey and **P. Gopinath***, Ferritin Nanocages: A Novel Platform for Biomedical Applications. [*Journal of Biomedical Nanotechnology*](#) **2014**, 10, 2950-2976 (*IF= 4.521*)
58. A. Sachdev, I. Matai and **P. Gopinath***. Implications of surface passivation on physicochemical and bioimaging properties of carbon dots. [*RSC Advances*](#), **2014**, 4, 20915-20921(*IF=3.108*)
59. I.Matai, A. Sachdev, P. Dubey, S. Uday Kumar, B. Bhushan and **P. Gopinath***, Antibacterial Activity and Mechanism of Ag-ZnO Nanocomposite on *S.aureus* and GFP-expressing Antibiotic Resistant *E.coli* [*Colloids and Surfaces B: Biointerfaces*](#) **2014**,115, 359–367 (*IF=3.887*)

Ph.D's Thesis guided: Completed= 06, Ongoing= 05

Books

1. **Gopinath**, P., Uday Kumar, S., Matai, I., Bhushan, B., Malwal, D., Sachdev, A., Dubey, P. [*Cancer Nanotheranostics*](#). Springer. ISBN 978-981-287-434-4. (**2015**)
2. Deepika Malwal, **P.Gopinath**, [*Fabrication of nanofibers for dye degradation*](#). Lambert Academic Publishing (LAP) ISBN 978-3-659-63721-6.(**2014**)
3. Abhay Sachdev, **P.Gopinath**, [*Chitosan based carbon nanodots and nanoparticles for bio-applications*](#). Lambert Academic Publishing (LAP) ISBN 978-3-659-30120-9. (**2014**)
4. Ishita Matai, **P.Gopinath**, [*Novel nanocomposites and nanofibers for biomedical applications*](#). Lambert Academic Publishing (LAP) ISBN 978-3-659-31255-7. (**2014**)
5. **Gopinath Packirisamy**, [*Prodrug Gene Therapy Vectors in Combination Therapies- An update*](#). Lambert Academic Publishing (LAP) ISBN 978-3-8383-4650-2. (**2010**)

Book edited (in press)

1. 3D Printing Technology in Nanomedicine [Editors: Dr. Nabeel Ahmad, **Dr. P. Gopinath** and Prof. Rajiv Dutta], Elsevier INC. Publishing Pennsylvania.2018.

Book chapters

1. Ashish Kalkal, Nabeel Ahmad, **P. Gopinath***, '3D printing in medicine; Current Challenges and Potential Applications' in book titled "3D Printing Technology in Nanomedicine" Elsevier. (**2018**) *in press*

2. Vinay Kumar, Saba Naqvi, **P. Gopinath***, ‘Application of Nanofibers in Tissue Engineering’ in book titled “Applications of Nanomaterials: Advances and Key Technologies” Elsevier. **(2018)** *in press*
3. Saba Naqvi, Vinay Kumar, **P. Gopinath***, ‘Nanomaterials toxicity: A challenge to end users’ in book titled “Applications of Nanomaterials: Advances and Key Technologies” Elsevier. **(2018)** *in press*
4. Deepika Malwal, **P. Gopinath***, ‘Recent advances in the synthesis of metal oxide (MO) nanostructures’ in book titled “Applications of Nanomaterials: Advances and Key Technologies” Elsevier. **(2018)** *in press*
5. Vinay Kumar, **P. Gopinath***, Vinoth-Kumar Lakshmanan, K. Navaneetha Pandiyaraj, ‘Surface analysis technique for assessing hemocompatibility of biomaterials’ in book titled “Hemocompatibility of Biomaterials for Clinical Applications” Elsevier. ISBN: 978-0-08-100499-9 (online) ISBN: 978-0-08-100497-5 (print) **(2018)**, 119-161.
6. M.C.Ramkumar, Pieter Cools, A.Arunkumar, Nathalie De Geyter, Rino Morent, Vinay kumar, S.Udaykumar, **P.Gopinath**, K.Navaneetha Pandiyaraj, ‘Polymer coatings for biocompatibility and reduced non-specific adsorption’ in book titled “Hemocompatibility of Biomaterials for Clinical Applications” Elsevier. ISBN: 978-0-08-100498-2 (online) ISBN: 978-0-08-100496-8 (print) **(2018)**, 155-198.
7. S.Raj Kumar and **P. Gopinath***, ‘Nano-Bioremediation: Applications of Nanotechnology for Bioremediation’ in book titled “Remediation of Heavy Metals in the Environment” CRC Press eBook ISBN 9781466510029 **(2016)** 27–48.
8. A. Sachdev, S. Uday Kumar, I. Matai, G. Bhargavi, P. Dubey, B. Bhushan and **P.Gopinath***. ‘Polymers as nanocarrier for cancer theranostic applications’ in book titled “*Recent Developments in Carbohydrates Polymer Research*” Research Signpost Publishers **(2014)** chapter 4, page no. 45-55, ISBN: 978-81-308-0534-4
9. I. Matai, A. Sachdev, S. Uday Kumar, P. Dubey, B. Bhushan and **P.Gopinath*** ‘Dendrimer: A promising nanocarrier for cancer therapy’ in book titled “*Nanotechnology: Recent Trends, Emerging Issues and Future Directions*” Nova publishers **(2014)** chapter 7, page no. 127-155, ISBN 978-1-63117-561-9.

Patents:

- ❖ Filed a patent on “Magnetic-field actuated hybrid nanofiber scaffold and apparatus for 4D tissue engineering (Patent Application number 201711007507)”