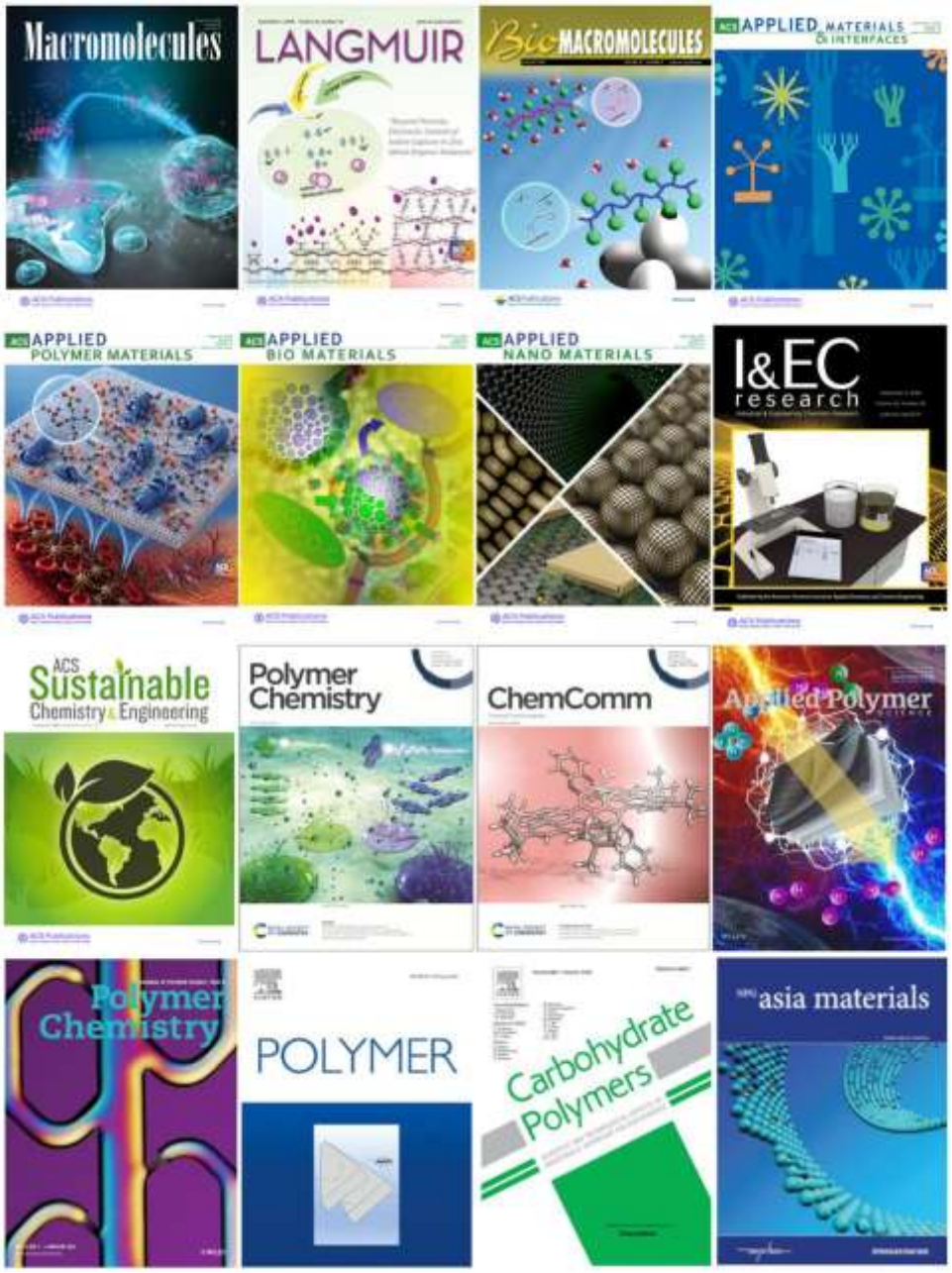
PUBLICATIONS



Research Record

ORCHID ID: 0000-0002-3425-7010

h-index: 52; i10-index: 108; Citations: >8200 (google Scholar)

Articles/Communications: 121; Patents: 14; Book Chapters: 5.

ARTICLES/COMMUNICATIONS

121 Arpita Roy, Shaon Dey, Kalipada Manna, Suvamay Maity, Sukanta Roy, Anirbandeep Bose, and **Sagar Pal**.
NPG Asia Materials, Accepted for publication, **2026.**
"*A Flexible Tissue-Adhesive Nanocomposite Hydrogel for Wi-Fi-Enabled Electro-Responsive Drug Release and Biomonitoring*".

120 Anurag Kumar Pandey, Sayan Mukherjee, Nantu Dogra, Tapan Kumar Nath, **Sagar Pal**, Santanu Dhara.
J. Mater. Chem. B, 14, 7195, **2026.**
"*S. aromaticum aqueous extract-derived carbon dots: a biosafe antibacterial nanocatalyst for water remediation*".

119 Kalipada Manna, Arpita Roy, and **Sagar Pal***.
Polymer, 346, 129650, **2026**.
"*Polymeric micelles and hydrogels: Tailored synthesis strategies and biomedical applications*".

118 Padmapani Pradhan, Abanindra Nath Sarkar, Shaon Dey, Sourav Batabyal, Gitanjalee Kumari, Sheeja Jagadevan, and **Sagar Pal***.
ACS Applied Engineering Materials, 4, 897, **2026**.
"*n–p–n Heterojunction Photocatalyst Based on a Polydopamine-Integrated CoFe LDH/Mn_3O_4 Ternary Hybrid*".

117 Shaon Dey, Abanindra Nath Sarkar, Padmapani Pradhan, Kalipada Manna, Govind Chouhan, Sheeja Jagadevan, and **Sagar Pal***.
ACS Applied Nano Materials, 8, 18348, **2025**.
"*Sunlight-Driven Degradation of Antibiotics and Dyes Using Polyaniline/Layered Double Hydroxide Nanosheet/$Co(OH)_2$ Nanosheet Z-Scheme Photocatalytic Nanocomposite for Wastewater Treatment*".

116 Anirban Dolai, Kalipada Manna, Subha Samanta, G. Roymahapatra, and **Sagar Pal***.
Langmuir, 41, 24326, **2025**.
"*Reversible Light-Controlled Sol–Gel Transition of an Ionic Hydrogel*".

115 Kalipada Manna, Padmapani Pradhan, Subha Samanta, Abhipsa Sekhar Biswal, Santosh Kumar Jana, Sukhendu Mandal, Soumit Chatterjee, and **Sagar Pal***.
Biomacromolecules, 26, 4898, **2025**.
"*Modulation of Photoluminescence to Detect Glutathione-Responsiveness of Phthalimide-Derived Polymeric Micelles*".

114 Abhay Shankar Patra, Shaon Dey, Biswajit Saha, Asim K. Mukherjee, Siddhartha Mishra, **Sagar Pal***.
Journal of Molecular Liquids, 435, 128100, **2025**.
"*A modified dextrin-based copolymeric flocculant for the beneficiation of low-quality iron ore*".

113 Sanjib Ghosh, Kalipada Manna, Kanta Chakraborty, Santanu Dhara, **Sagar Pal***.
ACS Applied Polymer Materials, 7, 4166, **2025**.
"*Site Specific Drug Delivery Using Injectable pH-Responsive Biopolymeric Hydrogel: Instant Crosslinking and Shear Thinning*".

112 Arpita Roy, Kalipada Manna, Shaon Dey, Kanta Chakraborty, Santanu Dhara, **Sagar Pal***.
Soft Matter, 21, 2836, **2025**.
"*Functionalized Amino Acid-based Injectable Hydrogel for Sustained Drug Delivery*".
[Published as **Inside Front Cover** of *Soft Matter*]

111 Padmapani Pradhan, Shaon Dey, Kalipada Manna, Asit Baran Panda, **Sagar Pal***.
Journal of Water Process Engineering, 69, 106617, **2025**.
"*In situ* synthesis of a photocatalyst using TiO_2 QDs-immobilized functionalized galactomannan for degradation of organic pollutant".

110 Kalipada Manna, Anirban Dolai, Sanjib Ghosh, Subha Samanta, Shaon Dey, **Sagar Pal***.
Macromolecules, 57, 8445, **2024**.
"Photoinduced Ultrafast Shape-Changing Self-Assembled Arylazopyrazole-Based Polymeric Micelles".

109 Koushik Singha, Gitanjalee Kumari, Sheeja Jagadevan, Abanindra Nath Sarkar, **Sagar Pal***.
Langmuir, 40, 16208-16225, **2024**.
"*In-situ* Synthesis of Exfoliated $Ni(OH)_2$ Nanosheets and AgNPs-embedded Functionalized Polyindole-based Trinary Hybrid Microspheres: A Z-Scheme Photocatalyst for the Sunlight Driven Degradation of Organic Pollutant with Enhanced Antibacterial Efficacy".

108 Kalipada Manna, Arpita Roy, Shaon Dey, Abhay Kumar, **Sagar Pal***.
Journal of Applied Polymer Science, 141, e55991, **2024**.
"Concentration-driven Morphology Change of a Self-aggregate Derived from Amino-acid inspired Fluorescence-Active Copolymer for Sustained Release of Hydrophobic Drug".

107 Dipankar Das, Shaon Dey, **Sagar Pal***.
Journal of Macromolecular Science, Part A: Pure and Applied Chemistry, 61, 493, **2024**.
"Cytocompatible hydrogel derived from dextrin and Poly(N-Vinyl acetamide) toward controlled antimicrobial release".

106 Kalipada Manna, Arpita Roy, Shaon Dey, Sanjib Ghosh, Padmapani Pradhan, **Sagar Pal***.
Journal of Macromolecular Science, Part A: Pure and Applied Chemistry, 61, 349, **2024**.
"A Review on the Culmination of Rational Development of Stimuli-responsive Polymeric Micelles as Vehicles for Site-Specific Hydrophobic Therapeutics".
[Published as **Front Cover** of *Journal of Macromolecular Science, Part A: Pure and Applied Chemistry*, Vol 61, Issue 6, **2024**]

105 Shaon Dey, Kalipada Manna, Padmapani Pradhan, Abanindra Nath Sarkar, Arpita Roy, **Sagar Pal***.
ACS Applied Nano Materials, 7, 4588, **2024**.
"Review of polymeric nanocomposites for photocatalytic wastewater treatment".

104 Shaon Dey, Arpita Roy, Kalipada Manna, Ruth Daniel, Sheeja Jagadevan, **Sagar Pal***.
Industrial & Engineering Chemistry Research, 63, 3539, **2024**.
"Adsorption of toxic Cd(II) on an antibacterial biopolymeric gel toward fabrication of a gel electrolyte-based supercapacitor device".

103 Kalipada Manna, Shaon Dey, Anirban Phukan, Sourav Kumar Dey, **Sagar Pal***.
Polymer, 291, 126581, **2024.**
"Alginic acid-based pH and thermoresponsive reversible switched polymeric micelle via RAFT polymerization".

102 Abanindra Nath Sarkar, Soni Kumari, Sheeja Jagadevan, **Sagar Pal***.
ACS Applied Nano Materials, 6, 17406, **2023**.
"*In-situ* synthesis of nanostructured composites of NiFe layered double hydroxide and polyaniline for photocatalytic degradation of organic pollutants and remediation of biological contaminants".

101 Dipankar Das, Arpita Roy, **Sagar Pal**[*].
ACS Applied Polymer Materials, 5, 3348, **2023**.
"A polysaccharide-based pH-sensitive hybrid hydrogel as a sustained release matrix for antimicrobial drugs."

100 Abanindra Nath Sarkar, Satyajeet Padhi, Soni Kumari, Sheeja Jagadevan, **Sagar Pal**[*].
Industrial & Engineering Chemistry Research, 62, 1227, **2023**.
"Facile synthesis of carbon dot deposited γ-FeOOH nanosheet/polypyrrole composite: a robust photocatalyst for degradation of antibiotics under sunlight irradiation with enhanced antibacterial activity".

99 Arpita Roy, Kalipada Manna, Shaon Dey, **Sagar Pal**[*].
Carbohydrate Polymers, 306, 120576, **2023.**
"Chemical modification of β-cyclodextrin towards hydrogel formation".

98 Arpita Roy, Kalipada Manna, **Sagar Pal**[*].
Materials Chemistry Frontiers, 6, 2338, **2022.**
"Recent advances in various stimuli-responsive hydrogels: from synthetic designs to emerging healthcare applications".

97 Abanindra Nath Sarkar, Soni Kumari, Sheeja Jagadevan, Asit Baran Panda, **Sagar Pal**[*].
ACS Applied Polymer Materials, 4, 6132, **2022**.
"Simultaneous in situ exfoliation of titanate and Zn–Cr layered double hydroxides with a copolymer for photocatalytic degradation of organic pollutants".

96 Arpita Roy, Preetam Guha Ray, Anirbandeep Bose, Santanu Dhara, **Sagar Pal**[*].
ACS Applied Bio Materials, 5, 3530, **2022.**
"pH-responsive copolymeric network gel using methacrylated β-cyclodextrin for controlled codelivery of hydrophilic and hydrophobic drugs".

95 Shaon Dey, Arpita Roy, Kalipada Manna, **Sagar Pal**[*].
Polymer Chemistry, 13, 3865, **2022.**
"The UCST phase transition of a dextran based copolymer in aqueous media with tunable thermoresponsive behavior".

94 Shaon Dey, Abhay Shankar Patra, Priyapratim Patra, Biswajit Saha, A. K. Mukherjee, **Sagar Pal**[*].
Materials Today Communications, 32, 103810, **2022**.
"Macromolecular selective flocculant derived from functionalized starch towards beneficiation of low-quality iron ore: Atomistic simulations and experimental studies".

93 Kalipada Manna, Priyapratim Patra, Arpita Roy, Rakesh Kumar Roy, Krishna Chaitanya Sunka, Santanu Dhara, Niladri Patra, **Sagar Pal**[*].
ACS Applied Polymer Materials, 4, 4432, **2022**.
"Amino acid inspired alginate-based pH sensitive polymeric micelles via reversible addition–fragmentation chain transfer polymerization".

92 Arpita Roy, Kalipada Manna, Preetam Guha Ray, Santanu Dhara, **Sagar Pal**[*].
ACS Applied Materials & Interfaces, 14, 17065, **2022**.
"Cyclodextrin based ultra-high stretchable, flexible, electro and pressure responsive adhesive transparent hydrogel as motion sensor".

91 Puja Das Karmakar, **Sagar Pal**[*].
Polymer Chemistry, 13, 1394, **2022**.
"Synthesis of an amphiphilic copolymer using biopolymer-dextran via a combination of ROP and RAFT techniques".

90 Arpita Roy, Preetam Guha Ray, Kalipada Manna, Chiranjib Banerjee, Santanu Dhara, **Sagar Pal**[*].
Biomacromolecules, 22, 5256, **2021**.

"Poly(*N*-vinyl imidazole) cross-linked β-cyclodextrin hydrogel for rapid hemostasis in severe renal arterial hemorrhagic model".

89 Puja Das Karmakar, Aniruddha Pal, Subhadip Bodhak, **Sagar Pal**[*].
ACS Applied Polymer Materials, 3, 5386, **2021**.
"Reversible addition–fragmentation chain transfer-mediated amphiphilic copolymeric composite as a nanocarrier for drug delivery application".

88 Puja Das Karmakar, **Sagar Pal**[*].
International Journal of Biological Macromolecules, 183, 718, **2021.**
"Dextran based amphiphilic self-assembled biopolymeric macromolecule synthesised via RAFT polymerization as indomethacin carrier".

87 Abanindra Nath Sarkar, Koushik Singha, Asit Baran Panda, **Sagar Pal**[*].
Polymer, 225, 123791, **2021.**
"*In-situ* deposited CdS NPs on pH induced fully exfoliated layered titanate-biopolymeric composite and its photocatalytic activity".

86 Priyapratim Patra, Abhay Shankar Patra, Asim Kumar Mukherjee, **Sagar Pal**[*].
Polymers for Advanced Technologies, 32, 2169, **2021.**
"Development of a highly efficient selective flocculant based on functionalized β-cyclodextrin toward beneficiation of low-quality iron ore".

85 Puja Das Karmakar, Aparna Shukla, Pralay Maiti, Soumit Chatterjee, **Sagar Pal**[*].
Journal of Applied Polymer Science, 138, 50381, **2021.**
"RAFT mediated bioconjugated amphiphilic graft-block copolymer using dextran, poly (NIPAAm) and poly (vinyl acetate)".

84 Shaon Dey, Priyapratim Patra, **Sagar Pal**[*].
Journal of the Indian Chemical Society, 98, 100066, **2021**.
"Functionalized polysaccharide-based flocculants for solid liquid separation of wastewater".

83 Lipi Midya, Abanindra Nath Sarkar, Raghunath Das, Arjun Maity, **Sagar Pal**[*].
International Journal of Biological Macromolecules, 164, 3676, **2020.**
"Crosslinked chitosan embedded TiO_2 NPs and carbon dots-based nanocomposite: An excellent photocatalyst under sunlight irradiation".

82 Arpita Roy, Subhendu Samanta, Koushik Singha, Pritiprasanna Maity, Nimmy Kumari, Animesh Ghosh, Santanu Dhara, **Sagar Pal**[*].
ACS Applied Bio Materials, 3, 3285, **2020.**
"Development of a thermoresponsive polymeric composite film using crosslinked β-cyclodextrin embedded with carbon quantum dots as transdermal drug carrier".

81 Priyapratim Patra, Niladri Patra, **Sagar Pal**[*].
Polymer Chemistry, 11, 2630, **2020.**
"Opposite swelling characteristics through changing the connectivity in a biopolymeric hydrogel based on glycogen and glycine".

80 Abhay Shankar Patra[1], Priyapratim Patra[1], Sautrick Chowdhury, A. K. Mukherjee, **Sagar Pal**[*].
Colloids and Surfaces A: Physicochemical and Engineering Aspects, 586, Article 124229, **2020.**
"Cationically functionalized amylopectin as an efficient flocculant for treatment of coal suspension".

79 Priyapratim Patra, Saundray Raj Soni, Venkata Sundeep Seesala, Santanu Dhara, Animesh Ghosh, **Sagar Pal**[*].
Journal of Polymer Science Part A: Polymer Chemistry, 57, 1697, **2019**.
"Synthesis of a novel copolymer using glycogen and poly(lactide) as a carrier of dual drugs- ornidazole and ofloxacin".

78 Lipi Midya, Avinash Chettri, **Sagar Pal**[*].
ACS Sustainable Chemistry & Engineering, 7, 9416, **2019.**

"Development of a novel nanocomposite using polypyrrole grafted chitosan-decorated CDs with improved photocatalytic activity under solar light illumination".

77 Priyapratim Patra, Venkata Sundeep Seesala, Saundray Raj Soni, Rakesh Kumar Roy, Santanu Dhara, Animesh Ghosh, Niladri Patra, **Sagar Pal**[*].
European Polymer Journal, 114, 255, **2019.**
"Biopolymeric pH-responsive fluorescent gel for *in-vitro* and *in-vivo* colon specific delivery of metronidazole and ciprofloxacin".

76 Lipi Midya, Abhay Shankar Patra, Chiranjib Banerjee, Asit Baran Panda, **Sagar Pal**[*].
Journal of Hazardous Materials, 369, 398, **2019.**
"Novel nanocomposite derived from ZnO/CdS QDs embedded crosslinked chitosan: an efficient photocatalyst and effective antibacterial agent".

75 Arpita Roy, Priti Prasanna Maity, Anirbandeep Bose, Santanu Dhara, **Sagar Pal**[*].
Materials Chemistry Frontiers, 3, 385, **2019.**
"β-Cyclodextrin based pH and thermo-responsive biopolymeric hydrogel as a dual drug carrier".

[Published as **Inside Front Cover of** *Materials Chemistry Frontiers*, Issue 3, 01 March, 2019]

74 Lipi Midya, Raghunath Das, Madhumita Bhaumik, Tanumoy Sarkar, Arjun Maity, **Sagar Pal**[*].
Journal of Colloid and Interface Science, 542, 187, **2019.**
"Removal of toxic pollutants from aqueous media using poly (vinyl imidazole) crosslinked chitosan synthesised through microwave assisted technique".

73 Suprotim Das, Priyapratim Patra, Koushik Singha, Pinakpani Biswas, Supriya Sarkar, **Sagar Pal**[*].
International Journal of Biological Macromolecules, 125, 35, **2019.**
"Graft copolymeric flocculant using functionalized starch towards treatment of blast furnace effluent".

72 Puja Das Karmakar, Venkata Sundeep Seesala, Aniruddha Pal, Santanu Dhara, Soumit Chatterjee, **Sagar Pal**[*].
Journal of Polymer Science Part A: Polymer Chemistry, 56, 2354, **2018**.
"Synthesis of RAFT mediated amphiphilic graft copolymeric micelle using dextran and poly (oleic acid) towards oral delivery of nifedipine".

71 Aniruddha Pal, Abanindra Nath Sarkar, Puja Das Karmakar, **Sagar Pal**[*]**.**
International Journal of Biological Macromolecules, 119, 954, **2018.**
"Amphiphilic graft copolymeric micelle using dextrin and poly (N-vinyl caprolactam) via RAFT polymerization: Development and application".

70 Aniruddha Pal, **Sagar Pal**[*]**.**
Journal of Colloid and Interface Science, 524, 122, **2018.**
"Synthesis of triblock copolymeric micelle based on poly (ethylene glycol) and poly (vinyl acetate) through reversible addition–fragmentation chain transfer polymerization".

69 Priyapratim Patra, Venkata Sundeep Seesala, Dipankar Das, Asit Baran Panda, Santanu Dhara, **Sagar Pal**[*]**.**
Polymer, 140, 122, **2018.**
"Biopolymeric nanogel derived from functionalized glycogen towards targeted delivery of 5-fluorouracil".

68 Arpita Roy, Priti Prasanna Maity, Santanu Dhara, **Sagar Pal**[*].
Journal of Applied Polymer Science, 135, 45939, **2018.**

"Biocompatible, stimuli responsive hydrogel of chemically crosslinked β-cyclodextrin as amoxicillin carrier".

67 Aniruddha Pal, **Sagar Pal***.
Polymer, 133, 184, **2017.**
"Effect of Fe_3O_4 NPs on micellization and release behavior of CBABC-type pentablock copolymer".

66 Barun Mandal, Arun Prabhu Rameshbabu, Saundray Raj Soni, Animesh Ghosh, Santanu Dhara, **Sagar Pal***.
ACS Applied Materials & Interfaces, 9, 36583, **2017.**
"*In situ* silver nanowire deposited cross-linked carboxymethyl cellulose: a potential transdermal anticancer drug carrier".

65 Aniruddha Pal, **Sagar Pal***.
Polymer, 127, 150, **2017**.
"Synthesis of poly (ethylene glycol)-block-poly (acrylamide)-block-poly (lactide) amphiphilic copolymer through ATRP, ROP and click chemistry: Characterization, micellization and pH-triggered sustained release behaviour".

64 Barun Mandal, Arun Prabhu Rameshbabu, Santanu Dhara, **Sagar Pal***.
Polymer, 120, 9, **2017**.
"Nanocomposite hydrogel derived from poly (methacrylic acid) / carboxymethyl cellulose/AuNPs: A potential transdermal drugs carrier".

63 Dipankar Das, Arun Prabhu Rameshbabu, Paulomi Ghosh, Priyapratim Patra, Santanu Dhara, **Sagar Pal***.
Carbohydrate Polymers, 171, 27, **2017**.
"Biocompatible nanogel derived from functionalized dextrin for targeted delivery of doxorubicin hydrochloride to MG 63 cancer cells".

62 Amit Kumar Sarkar, Arka Saha, Lipi Midya, Chiranjib Banerjee, Narayan R. Mandre, Asit Baran Panda, **Sagar Pal***.
ACS Sustainable Chemistry & Engineering, 5, 1881, **2017.**
"Crosslinked biopolymer stabilized exfoliated titanate nano sheet supported AgNPs: a green sustainable ternary nanocomposite hydrogel for catalytic and antimicrobial activity".

61 Aniruddha Pal, **Sagar Pal***.
Carbohydrate Polymers, 160, 1, **2017.**
"Amphiphilic copolymer derived from tamarind gum and poly (methyl methacrylate) via ATRP towards selective removal of toxic dyes".

60 Abhay Shankar Patra, Soumitra Ghorai, Debabrata Sarkar, Raghunath Das, Supriyo Sarkar, **Sagar Pal***.
Bioresource Technology, 225, 367, **2017.**
"Anionically functionalized guar gum embedded with silica nanoparticles: an efficient nanocomposite adsorbent for rapid adsorptive removal of toxic cationic dyes and metal ions".

59 Dipankar Das, Arun Prabhu Rameshbabu, Priyapratim Patra, Paulomi Ghosh, Santanu Dhara, **Sagar Pal***.
Polymer, 107, 282, **2016.**
"Biocompatible amphiphilic microgel derived from dextrin and poly(methyl methacrylate) for dual drugs carrier".

58 Lipi Midya, Aniruddha Pal, **Sagar Pal***.
ChemistrySelect, 1, 6115, **2016.**
"Development of crosslinked chitosan/Au nanocomposite, its characterization and application towards solar light driven photocatalytic degradation of toxic organic compounds".

57 Priyapratim Patra, Arun Prabhu Rameshbabu, Dipankar Das, Santanu Dhara, Asit Baran Panda, **Sagar Pal***.
Polymer Chemistry, 7, 5426, **2016.**
"Stimuli-responsive, biocompatible hydrogel derived from glycogen and poly(N-isopropylacrylamide) for colon targeted delivery of ornidazole and 5-amino salicylic acid".

56 Dipankar Das, Priyapratim Patra, Paulomi Ghosh, Arun Prabhu Rameshbabu, Santanu Dhara, **Sagar Pal***.
Polymer Chemistry, 7, 2965, **2016.**

"Dextrin and poly (lactide) based biocompatible and biodegradable nanogel for cancer targeted delivery of doxorubicin".

55 Amit Kumar Sarkar, Arka Saha, Abhrojyoti Tarafder, Asit Baran Panda, **Sagar Pal***.
ACS Sustainable Chemistry & Engineering, 4, 1679, **2016.**
"Efficient removal of toxic dyes via simultaneous adsorption and solar light driven photodegradation using recyclable functionalized amylopectin–TiO2–Au nanocomposite".

54 Barun Mandal, Dipankar Das, Arun Prabhu Rameshbabu, Santanu Dhara, **Sagar Pal***.
RSC Advances, 6, 19605, **2016.**
"Biodegradable, biocompatible transdermal device derived from carboxymethyl cellulose and multi-walled carbon nanotube for sustained release of diclofenac sodium".

53 Dipankar Das, Sudipta Mukherjee, Aniruddha Pal, Raghunath Das, Santi Gopal Sahu, **Sagar Pal***.
RSC Advances, 6, 9352, **2016.**
"Synthesis and characterization of biodegradable copolymer derived from dextrin and poly(vinyl acetate) via atom transfer radical polymerization".

52 Aniruddha Pal, **Sagar Pal***.
RSC Advances, 6, 2958, **2016.**
"Synthesis of copolymer derived from tamarind kernel polysaccharide (TKP) and poly(methacrylic acid) via SI-ATRP with enhanced pH triggered dye removal".

51 Abhay Shankar Patra, Soumitra Ghorai, Shankhamala Ghosh, Barun Mandal, **Sagar Pal***.
Journal of Hazardous Materials, 301, 127, **2016**.
"Selective removal of toxic anionic dyes from aqueous media using a novel nanocomposite derived from cationically modified guar gum and silica nanoparticles".

50 Amit Kumar Sarkar, Arka Saha, Asit Baran Panda, **Sagar Pal***.
Chemical Communications, 51, 16057, **2015**.
"pH Triggered superior selective adsorption and separation of both the cationic and anionic dyes and photocatalytic activity on fully exfoliated titanate layer –natural polymer based nanocomposite".

49 Dipankar Das, Paulomi Ghosh, Chanchal Haldar, Animesh Ghosh, Santanu Dhara, Asit Baran Panda, **Sagar Pal***.
ACS Applied Materials & Interfaces, 7, 14338, **2015***.*
"Stimulus-responsive, biodegradable, biocompatible, covalently crosslinked hydrogel based on dextrin and poly (N-isopropyl acrylamide) for in-vitro/in-vivo controlled drug release".

48 **Sagar Pal***, Abhay Shankar Patra, Soumitra Ghorai, Amit Kumar Sarkar, Vivekananda Mahato, Supriyo Sarkar, R. P. Singh.
Bioresource Technology, 191, 291, **2015.**
"Efficient and rapid adsorption characteristics of templating modified guar gum and silica nanocomposite towards removal of toxic reactive blue and Congo red dyes".

47 Raghunath Das, **Sagar Pal*.**
International Journal of Biological Macromolecules, 77, 207, **2015.**
"Modified hydroxypropyl methyl cellulose: efficient matrix for controlled release of 5-amino salicylic acid".

46 Raghunath Das, Dipankar Das, Paulomi Ghosh, Santanu Dhara, Asit B. Panda, **Sagar Pal*.**
RSC Advances, 5, 27481, **2015.**
"Development and application of a nanocomposite derived from crosslinked HPMC and Au nanoparticles for colon targeted drug delivery".

45 Dipankar Das, Paulomi Ghosh, Santanu Dhara, A. B. Panda, **Sagar Pal***.
ACS Applied Materials & Interfaces, 7, 4791, **2015**.
"Dextrin and poly (acrylic acid) based biodegradable, non-cytotoxic, chemically crosslinked hydrogel for sustained release of ornidazole and ciprofloxacin".

44 Aniruddha Pal, Dipankar Das, Amit Kumar Sarkar, Soumitra Ghorai, Raghunath Das, **Sagar Pal***.
European Polymer Journal, 66, 33, **2015**.
"Synthesis of glycogen and poly (acrylic acid)-based graft copolymers via ATRP and its application for selective removal of Pb^{2+} ions from aqueous solution".

43 Raghunath Das, Dipankar Das, Paulomi Ghosh, Animesh Ghosh, Santanu Dhara, Asit Baran Panda, **Sagar Pal*.**
Cellulose*, 22,* 313**, 2015.**
"Novel pH responsive graft copolymer based on HPMC and poly (acrylamide) synthesized by microwave irradiation: application in controlled release of ornidazole".

42 **Sagar Pal***, Abhay Shankar Patra, Soumitra Ghorai, Amit Kumar Sarkar, Raghunath Das, Supriyo Sarkar.
Environmental Science-Water Research & Technology, 1, 84, **2015**.
"Modified guar gum/SiO_2: development and application of a novel hybrid nanocomposite as flocculant for the treatment of wastewaters".

41 Amit Kumar Sarkar, Soumitra Ghorai, Abhay Shankar Patra, Brijesh K. Mishra, N. R. Mandre, **Sagar Pal***.
International Journal of Biological Macromolecules*,* 72, 356, **2015.**
"Flocculation properties of modified amylopectin for the treatment of synthetic effluent and industrial wastewaters".

40 Dipankar Das, **Sagar Pal*.**
RSC Advances*,* 5, 25014, **2015.**
Modified biopolymer-dextrin based crosslinked hydrogels: application in controlled drug delivery"**.**

39 Dipankar Das, **Sagar Pal*.**
International Journal of Biological Macromolecules*,* 72, 171**, 2015.**
"Deswelling and gel characteristics of modified dextrin based crosslinked hydrogel: application in controlled release of ciprofloxacin".

38 Soumitra Ghorai, Amit Kumar Sarkar, **Sagar Pal***.
Bioresource Technology, 170, 578, **2014**.
"Rapid adsorptive removal of toxic Pb^{2+} ion from aqueous solution using recyclable, biodegradable nanocomposite derived from templated partially hydrolyzed xanthan gum and nanosilica".

37 Amit Kumar Sarkar, Aniruddha Pal, Soumitra Ghorai, N. R. Mandre, **Sagar Pal***.
Carbohydrate Polymers*,* 111, 108, **2014.**
"Efficient removal of malachite green dye using biodegradable graft copolymer derived from amylopectin and poly (acrylic acid)".

36 Soumitra Ghorai, Asish Sarkar, Mohammad Raoufi, Asit Baran Panda, Holger Schönherr, **Sagar Pal***.
ACS Applied Materials & Interfaces*, 3,* 4766, **2014.**
"Enhanced removal of methylene blue and methyl violet dyes from aqueous solution using a nanocomposite of hydrolyzed polyacrylamide grafted xanthan gum and nanosilica".

35 Dipankar Das, Raghunath Das, Jayanta Mandal, Animesh Ghosh, **Sagar Pal*.**
Journal of Applied Polymer Science*,* 131, 40039, **2014.**
"Dextrin cross linked with poly (lactic acid): a novel hydrogel for controlled drug release application".

34 Dipankar Das, Raghunath Das, Paulomi Ghosh, Santanu Dhara, Asit Baran Panda, **Sagar Pal*.**
RSC Advances*,* 3, 25340, **2013.**
"Dextrin cross linked with poly (HEMA): a novel hydrogel for colon specific delivery of ornidazole".

33 Soumitra Ghorai, Amit Sarkar, A. B. Panda, **Sagar Pal***.
Bioresource Technology*,* 144, pp. 485-491, **2013.**
"Effective removal of Congo red dye from aqueous solution using modified xanthan gum/silica hybrid nanocomposite as adsorbent".

32 Soumitra Ghorai, Asish Sarkar, A. B. Panda, **Sagar Pal***.
Industrial & Engineering Chemistry Research**,** 52, 9731**, 2013.**

"Evaluation of the flocculation characteristics of polyacrylamide grafted xanthan gum/silica hybrid nanocomposite".

31 Raghunath Das, Soumitra Ghorai, **Sagar Pal***.
Chemical Engineering Journal*,* 229, 144, **2013**.
"Flocculation characteristics of polyacrylamide grafted hydroxypropyl methyl cellulose: An efficient biodegradable flocculant".

30 Raghunath Das, **Sagar Pal***.
Colloids and Surfaces B: Biointerfaces*,* 110, 236, **2013**.
"Hydroxypropyl methyl cellulose grafted with polyacrylamide: application in controlled release of 5-amino salicylic acid".

29 S. Ghosh, **Sagar Pal***.
International Journal of Biological Macromolecules, 58, 296, **2013**
"Modified tamarind kernel polysaccharide: A novel matrix for controlled release of aspirin".

28 Amit Sarkar, N. R. Mandre, A. B. Panda, **Sagar Pal***.
Carbohydrate Polymers*,* 95, 753, **2013.**
"Amylopectin grafted with poly (acrylic acid): Development and application of a high performance flocculant".

27 R. P. Singh, **Sagar Pal***, V. Rana, S. Ghorai.
Carbohydrate Polymers, 91, 294, **2013**.
"Amphoteric amylopectin: a novel polymeric flocculant".

26 **Sagar Pal***, S. Ghorai, C. Das, S. Samrat, A. B. Panda.
Industrial & Engineering Chemistry Research**,** 51, 15546, **2012.**
"Carboxymethyl tamarind-graft-poly (acrylamide)/silica: A novel nanocomposite for adsorption of methylene blue dye".

25 S. Ghorai, A. Sinhamahapatra, A. Sarkar, A. B. Panda, **Sagar Pal***.
Bioresource Technology, 119, 181, **2012**.
"Novel biodegradable nanocomposite based on XG-g-PAM/SiO_2: application of an efficient adsorbent for Pb^{2+} ions from aqueous solution".

24 **Sagar Pal***, A. Pal.
Polymer Bulletin, 69, 545, **2012.**
"Synthesis and characterizing a novel polymeric flocculant based on amylopectin-*graft*-polyacrylamide-*graft*-polyacrylic acid [(AP-g-PAM)-g-PAA]".

23 R. Das, A. B. Panda, **Sagar Pal***.
Cellulose*,* 19, 933, **2012**.
"Synthesis, characterization of a novel polymeric hydrogel based on hydroxypropyl methyl cellulose grafted with polyacrylamide".

22 **Sagar Pal*,** M. Gorain, A. Giri, A. Bandyopadhyay, A. B. Panda.
International Journal of Biological Macromolecules, 49, 1152, **2011.**
"In-situ silica incorporated carboxymethyl tamarind kernel polysaccharide: Development and application of a novel hybrid nanocomposite".

21 **Sagar Pal*,** S. Ghorai, M. K. Dash, S. Ghosh, G. Udayabhanu.
Journal of Hazardous Materials, 192, 1580, **2011.**
"Flocculation properties of polyacrylamide grafted carboxymethyl guar gum (CM-g-PAM) synthesized by conventional and microwave assisted method".

20 Sandipta Ghosh, U. Jha, **Sagar Pal***.
Bioresource Technology, 102, 2137, **2011.**
"High performance polymeric flocculant based on hydrolyzed polyacrylamide grafted tamarind kernel polysaccharide (Hyd. TKP-g-PAM)".

19 **Sagar Pal***, T. Nasim, A. Patra, S. Ghosh, A. B. Panda.
International Journal of Biological Macromolecules, 47, 623, **2010.**
"Microwave assisted synthesis of polyacrylamide grafted dextrin (Dxt-g-PAM): Development and application of a novel polymeric flocculant".

18 Sandipta Ghosh, G. Sen, U. Jha, **Sagar Pal***.
Bioresource Technology, 101, 9638, **2010.**
"Novel biodegradable polymeric flocculant based on polyacrylamide grafted tamarind kernel polysaccharide".

17 Gautam Sen, R. P. Singh, **Sagar Pal***.
Journal of Applied Polymer Science, 115, 63, **2010.**
"Microwave initiated synthesis of polyacrylamide grafted sodium alginate: Synthesis and characterization".

16 **Sagar Pal***, Sandipta Ghosh, Gautam Sen, U. Jha, R. P. Singh.
International Journal of Biological Macromolecules, 45, 518, **2009.**
"Cationic tamarind kernel polysaccharide (Cat TKP): A novel polymeric flocculant for the treatment of textile industry wastewater".

15 Gautam Sen**, Sagar Pal***.
Journal of Applied Polymer Science, 114, 2798, **2009.**
"A novel polymeric biomaterial based on carboxymethyl starch and its application in controlled drug release".

14 Gautam Sen**, Sagar Pal***.
International Journal of Biological Macromolecules*,* 45, 48, **2009.**
"Microwave initiated synthesis of polyacrylamide grafted carboxymethylstarch (CMS-g-PAM): Application as a novel matrix for sustained drug release".

13 Gautam Sen, Ranvijay Kumar, S. Ghosh, **Sagar Pal***.
Carbohydrate Polymers, 77, 822, **2009.**
"A novel polymeric flocculant based on polyacrylamide grafted carboxymethylstarch".

12 Gautam Sen, **Sagar Pal***.
Macromolecular Symposia, 277, 100, **2009.**
"Polyacrylamide grafted carboxymethyl tamarind (CMT-g-PAM): Development and application of a novel polymeric flocculant".

11 Ram P. Singh, **Sagar Pal,** S. Krishnamoorthy, S. K. Ali, P. Adhikary.
Pure and Applied Chemistry, 81, 525, **2009.**
"High technology materials based on modified polysaccharides".

10 **Sagar Pal***.
Journal of Applied Polymer Science, 111, 2630, **2009.**
"Carboxymethyl guar (CMG): synthesis and its macromolecular characterization".

9 Witold Brostow, Haley E. Hagg Lobland, **Sagar Pal**, R.P. Singh.
Polymer Engineering and Science, 48, 1892, **2008**.
"Flocculation of Iron and Manganese Ore-containing suspensions".

8 **Sagar Pal***, G. Sen, N. C. Karmakar, D. Mal and R. P. Singh.
Carbohydrate Polymers, 74, 590, **2008.**
"Synthesis, characterization and application of cationic polysaccharides as flocculants in relation to coal fine suspension".

7 **Sagar Pal***, G. Sen, S. Mishra, R. K. Dey, U. Jha.
Journal of Applied Polymer Science, 110, 392, **2008**.
"Carboxymethyl tamarind: synthesis, characterization and its application as novel drug delivery agent".

6 **Sagar Pal***, D. Mal, R. P. Singh.
Journal of Applied Polymer Science*,* 108, 2674, **2008**.
"Characterization of cationic starch: an efficient flocculating agent".

5 Witold Brostow, **Sagar Pal**, Ram P. Singh.
Materials Letters, 61, 4381, **2007.**
"A model of flocculation".

4 **Sagar Pal***, D. Mal, R. P. Singh.
Journal of Applied Polymer Science, 105, 3240, **2007**.
"Synthesis and characterization of cationic guar gum: A high performance flocculating agent".

3 R. P. Singh, **Sagar Pal**, D. Mal.
Macromolecular Symposia, 242, 227*,* **2006**.
"A high performance flocculating agent and viscosifiers based on cationic guar gum".

2 **Sagar Pal,** D. Mal, R. P. Singh.
Colloids & Surfaces A: Physicochemical Engg. Aspects*,* 289, 193, **2006**.
"Synthesis, characterization and flocculation characteristics of cationic glycogen: A novel polymeric flocculant".

1 **S. Pal,** D. Mal, R. P. Singh.
Carbohydrate Polymers*,* 59, 417, **2005**.
"Cationic starch: an effective flocculating agent".

PATENT

Granted (09)

- Arpita Roy, Shaon Dey, Kalipada Manna, **Sagar Pal**.
"A New Adhesive Nanocomposite Hydrogel and its Preparation thereof."
Indian Patent No. 587141, Date of grant: 23.04.2026 (Indian Patent Application No. 202531019066 dated 04.03.2025).

- Kalipada Manna, **Sagar Pal**.
"A new light responsive polymeric micelle for real time monitored delivery of therapeutics and a process for the preparation thereof"
Indian Patent No. – 569729, Date of Grant: 12.08.2025 (Indian Patent Application No. 202431103949 dated 28.12.2024).

- Abhay Shankar Patra, Priyapratim Patra, **Sagar Pal**, Asim Kumar Mukherjee.
"Alginic acid/sodium alginate-based polymer as an organic binder in iron ore pelletization".
Indian Patent No. – 548923, Date of Grant: 28.08.2024 (Indian Patent Application No. 202131014773, dated 31.03.2021).

- Biswajit Saha, Abhay Shankar Patra, Priyapratim Patra, **Sagar Pal**, Asim Kumar Mukherjee.
"Carboxymethyl cellulose based polymer as an organic binder in iron ore pelletization".
Indian Patent No. – 532143, Date of Grant: 04.04.2024 (Indian Patent Application No. – 202131014760, dated 31.03.2021).

- **Sagar Pal**, Soumitra Ghorai, A. Sarkar.
"Amphoteric xanthan gum/SiO_2 hybrid nanocomposite (Amp. XG/SiO2): Development and application of a novel adsorbent for removal of Congo red dye (CR dye) from aqueous solution".
Indian Patent No. – 516308, Date of Grant: 28.02.2024 (Indian Patent Application No. – 931/Kol/2014, dated 12.09.2014).

- **Sagar Pal**, Priyapratim Patra.
  "Biopolymeric super absorbent hydrogel and its preparation thereof".
  Indian Patent No. – 440439, Date of Grant – 25.07.2023 (Patent Application No. 201831022160 dated 13.06.2018).

- Abhay Shankar Patra, Asim Kumar Mukherjee, **Sagar Pal**, Priyapratim Patra.
  "Synthesis of reagent based on β-cyclodextrin for the beneficiation of low-quality iron ore".
  Indian Patent No. – 412157, Date of Grant – 23.11.2022 (Indian Patent Application No. 201831049337 dated 27.12.2028).

- **Sagar Pal**, Abhay Shankar Patra.
  "A flocculant for the reduction of pollutant content from mine process water".
  Indian Patent No. – 378107, Date of Grant – 28.09.2021 (Patent Application No. 201731038017 dated 26.10.2017).

- Ram Prakash Singh, **Sagar Pal**.
  "Process for manufacture of cationic amylopectin and method of flocculation".
  Indian Patent No. – 224777, Date of Grant – 22.10.2008 (Patent Application No. – 483/KOL/2003 dated 17.09.2003).

Filed (06)

- Anirban Dolai, Subha Samanta, **Sagar Pal.**
  "A new adhesive light responsive copolymer and its preparation thereof".
  Indian Patent filed (Internal Docket No. IITISM-IPMC/IDF/2026/<06/08/2026 15:42:47>), **2026.**

- Shaon Dey, Anirban Dolai, Sourav Batabyal, Siddhartha Agarwal, **Sagar Pal**.
  "AI-Driven Copolymeric Flocculant for Mine Process Effluent Treatment and its Preparation Thereof".
  Indian Patent Filed, **2025.**

- Abhay Shankar Patra, Asim K. Mukherjee, Shaon Dey, **Sagar Pal**.
  "Flocculant Copolymer for Coal Washery Water Treatment, Process of Preparation and Application(S) Thereof."
  Indian Patent Application No. 202531030367 dated **28.03.2025**.

- Abhay Shankar Patra, Shaon Dey, Biswajit Saha, Asim Kumar Mukherjee, **Sagar Pal**.
  "A modified polysaccharide based selective flocculant and method(s)thereof"
  International PCT Application No. PCT/IB2024/050842, dated **30.01.2024**
  Indian Patent Application No. 202331006300, dated **31.01.2023.** (Filed)

- Arpita Roy, **Sagar Pal.**
  "An injectable hydrogel with pH sensitivity and a process for the preparation thereof".
  Indian Patent Application No. 202331064343, dated **25.09.2023.** (Filed)

- Shaon Dey, Abhay Shankar Patra, **Sagar Pal**.
  "A copolymeric reagent for treatment of coal tailings and a process for the preparation thereof".
  Indian Patent Application No. 202331055061, dated **17.08.2023**. (Filed)

BOOK CHAPTER

5 Arpita Roy, Kalipada Manna, Shaon Dey, and **Sagar Pal**[*]. *In Comprehensive Polymer Science (Second Edition),* DOI: https://doi.org/10.1016/B978-0-323-95486-0.00109-5, 481-495, **2026**.
"Protein-polymer conjugates".
Publisher: Elsevier Ltd.

4 **Sagar Pal**[*]**,** Raghunath Das, Soumitra Ghorai. *In Cellulose based graft copolymers: Structure and Chemistry, Vijay Thakur (Principle Editor),* Chapter 15, 301-333, **2015.**
"Hydroxypropyl methyl cellulose grafted with poly (acrylamide): Application of novel polymeric material as flocculant as well as adsorbent".
Publisher: Taylor & Francis Group – CRC Press – USA

3 **Sagar Pal**[*]**,** R. Das. *In Polysaccharide based Graft copolymers, Susheel Kalia and M. W. Sabba (Eds.),* Chapter 9, 325-345, **2013**.
"Polysaccharide based graft copolymers for biomedical applications".
Publisher: Springer-Verlag Berlin Heidelberg.

2 **Sagar Pal**[*]**,** S. K. Ali, G. Sen, R. P. Singh. *In Green Chemistry for Environmental Remediation*, *Rashmi Sanghi and Vandana Singh (Eds.),* PART – 4; Chapter 23, 729-757, **2011.**
"Modification and Applications of Guar Gum in the Field of Green Chemistry".
Publisher: Scrivener (WILEY) Publishing LLC, Austin, TX 78702.

1 G. Sen, A. Sharon, **Sagar Pal.** *In Handbook of Biopolymers: Biomedical and Environmental Application, Susheel Kalia and Luc Avérous (Eds.),* Chapter 5, 99-128, **2011.**
"Grafted polysaccharides: Smart Materials of The Future, Their Synthesis and applications".
Publisher: Scrivener (WILEY) Publishing LLC, Austin, TX 78702.

RESEARCH HIGHLIGHTS

- *Highlights in Advanced Science News*: Novel Copolymers for Improved Drug Delivery; https://www.advancedsciencenews.com/novel-copolymers-for-improved-drug-delivery/, 11th Sept, **2018**.
- *Highlights in NatureIndia*: It all gels for pollutant remover; doi:10.1038/nindia.2017.39, 3rd March, **2017**.
- *Highlights in NatureIndia*: Hydrogel delivers drugs to colon; doi:10.1038/nindia.2016.135, 19th Oct, **2016**.
- *Highlights in NatureIndia*: Nanocomposite, sunlight degrade toxic dyes; doi:10.1038/nindia.2016.67, 27th May, **2016**.
- *Highlights in NatureIndia*: Porous hydrogel to carry drugs; doi:10.1038/nindia.2015.27, 25th Feb, **2015**.

TECHNICAL ARTICLES

3 Witold Brostow, Haley E. Hagg Lobland, **Sagar Pal**, Ram P. Singh.
Journal of Materials Education, 31**,** 157-166, **2009.**
"Polymeric flocculants for wastewater and industrial effluent treatment".

2 Ram P. Singh, Dipti Biswal, **Sagar Pal**, Pubali Adhikary, S. Krishnamoorthy.
Popular Plastics & Packaging, pp. 83-85, **(June, 2006)**.
"Novel characteristics of hydrolysed, unhydrolyzed grafted and cationised polysaccharides".

1 **Sagar Pal**, R. P. Singh.
Materials Research Innovations, 9 (2), pp. 55-56, **2005**.
"Investigation on flocculation characteristics of cationic polysaccharides: Novel polymeric flocculants".