

Patents Filed/Granted

1. NANOCOMPOSITE MATERIAL USEFUL FOR THE PREPARATION OF SUPERHYDROPHOBIC COATING AND A PROCESS FOR THE PREPARATION THEREOF. Inventors: **Ayyappanpillai Ajayaghosh** (IN), Sampath Srinivasan (IN), Vakayil K. Praveen (IN). Assignee: Council of Scientific & Industrial Research, New Delhi (IN) – **US Patent No.: US8323732B2** granted on 12/04/2012; **Indian Patent No.: 271219** granted on 09/02/2016.
2. PYRROLE END-CAPPED BIPYRIDINE ASSAY POWDER FOR SELECTIVE DETECTION OF ZINC IONS AND A PROCESS FOR THE PREPARATION THEREOF. Inventors: **Ayyappanpillai Ajayaghosh** (IN), Sivaramapanicker Sreejith (IN). Assignee: Council of Scientific & Industrial Research, New Delhi (IN) – **US Patent No.: US8344150B2** granted on 01/01/2013; **Indian Patent No.: 265110** granted on 10/02/2015.
3. WHITE LIGHT EMITTING ORGANOGEL AND PROCESS THEREOF. Inventors: **Ayyappanpillai Ajayaghosh** (IN), Chakkooth Vijayakumar (IN); Vakayil K. Praveen (IN). Assignee: Council of Scientific & Industrial Research, New Delhi (IN) – **US Patent No.: US8529790B2** granted on 10/09/2013; **Indian Patent No.: 268527** granted on 02/09/2015.
4. A REUSABLE THIOPHENE END CAPPED BIPYRIDINE FLUORESCENT ASSAY FOR THE DETECTION OF CYANIDE ANIONS IN AQUEOUS AND BIORELEVANT SAMPLES AND A PROCESS THEREOF. Inventors: **Ayyappanpillai Ajayaghosh** (IN), Sivaramapanicker Sreejith (IN); Kizhumuri P. Divya (IN), Purosothaman Jayamurthy (IN). Assignee: Council of Scientific & Industrial Research, New Delhi (IN) – **Indian Patent No.: 274930** granted on 13/08/2016.
5. MOLECULAR PROBES WITH HIGH FLUORESCENCE FOR SOLID-STATE LIGHTING, SELECTIVE DISCRIMINATION OF COUNTERANIONS OF ZINC, TWO PHOTON IMAGING. Inventors: **Ayyappanpillai Ajayaghosh** (IN), Kizhumuri P. Divya (IN), Sampath Srinivasan (IN). Assignee: Council of Scientific & Industrial Research, New Delhi (IN) – **Indian Patent No.: 303798** granted on 30/11/2018.
6. CARBAZOLE END CAPPED BIPYRIDINE COMPOUNDS AND PROCESS FOR PREPARATION THEREOF. Inventors: **Ayyappanpillai Ajayaghosh** (IN), Kizhumuri P. Divya (IN), Sampath Srinivasan (IN). Assignee: Council of Scientific & Industrial Research, New Delhi (IN) – **Japan Patent No.: JP5773377B2** granted on 02/09/2015; **European Patent No.: EP2663554B1** granted on 18/05/2016; **US Patent No.: US9493488B2** granted on 15/11/2016; **US Patent No.: US10144722B2** granted on 04/12/2018.
7. FLUORESCENT MATERIALS FOR SELF-ERASABLE WRITING, AUTHENTIC SECURITY LABELING, CURRENCY COUNTERFEIT PREVENTION AND PROCESS FOR THE PREPARATION THEREOF. Inventors: **Ayyappanpillai Ajayaghosh** (IN), Thirumalai

Kumaran Rajasekaran (IN). Assignee: Council of Scientific & Industrial Research, New Delhi (IN) – **US Patent No.: US9255222B2** granted on 09/02/2016; **Indian Patent Application No.: 2294/DEL/2011** date of filing 12/08/2011.

8. A SQUARINE BASED FLUORESCENT PROBE AND A PROCESS FOR THE PREPARATION THEREOF. Inventors: **Ayyappanpillai Ajayaghosh** (IN), Anees Puravan (IN). Assignee: Council of Scientific & Industrial Research, New Delhi (IN) – **European Patent No.: EP3039082B1** granted on 04/10/2017; **US Patent No.: US9791451B2** granted on 17/10/2017; **Japan Patent No.: JP6360896B2** granted on 18/07/2018; **Indian Patent Application No.: 2564/DEL/2013** date of filing 30/08/2013.
9. METHOD OF PREPARATION OF UREASE AND GOLD QUANTUM CLUSTER MEDIATED NANOBIOSENSOR FOR THE DETECTION OF BLOOD UREA AND THE PROCESS INVOLVED. Inventors: R. S. Jayasree (IN), **Ayyappanpillai Ajayaghosh** (IN), Lakshmi V. Nair (IN). **Indian Patent Application No.: 1567/CHE/2012** date of filing 20/04/2012.
10. DEVICE FOR MASK ALIGNMENT. Inventors: P. V. Agarwal; A. Agarwal; S. Pawar; B. Ram; Ayyappanpillai Ajayaghosh. Application No. 1887DEL2015.
11. LOW COST BIO-BASED IONIC LIQUID CRYSTAL MEMBRANE USEFUL FOR ENERGY STORAGE SYSTEMS & PREPARATION THEREOF. Inventors: **Ayyappanpillai Ajayaghosh** (IN), Janardhanan Devaki Sudha (IN), Sasi Renjith (IN), Nallathamby Kalaiselvi (IN), Bongu Chandrasekhar (IN). Assignee: Council of Scientific & Industrial Research, New Delhi (IN). **Indian Patent Application No.: 201611027797** date of filing 16/08/2016.
12. A NOVEL DIKETOPYROLE SUPRAMOLECULAR BLACK DYE AND ELASTOMER AS A NEAR INFRARED FILTER. Inventors: **Ayyappanpillai Ajayaghosh** (IN), Samrat Ghosh (IN). Assignee: Council of Scientific & Industrial Research, New Delhi (IN). **Indian Patent Application No.: 201711002216A** date of filing 20/01/2017.
13. DEVELOPMENT OF SUPERHYDROPHOBIC COATINGS FOR ENERGY SAVING MECHANICAL MOTION AND RELATED APPLICATIONS. Inventors: **Ayyappanpillai Ajayaghosh** (IN), Balaraman Vedhanarayanan (IN), Rahul Dev Mukhopadhyay (IN). Assignee: Council of Scientific & Industrial Research, New Delhi (IN). **Indian Patent Application No.: 201711037002A** date of filing 18/10/2017.
14. HYBRID PLANAR LIGHT CONCENTRATOR WITH ADAPTABLE TRANSPARENCY. Inventors: Adersh Ashok (IN), **Ayyappanpillai Ajayaghosh** (IN), Animesh M. Ramachandran (IN). Assignee: Council of Scientific & Industrial Research, New Delhi (IN). **Indian Patent Application No.: 201811008500** date of filing 08/03/2018.

15. PROCESS FOR THE PREPARATION OF PYRYLIUM SALTS. Inventors: Sasidhar Balappa Somappa (IN), Chettiyal Thodi Fathimath Salfeena (IN), **Ayyappanpillai Ajayaghosh** (IN). Assignee: Council of Scientific & Industrial Research, New Delhi (IN). **Indian Patent Application No.: 201811004385** date of filing 08/03/2018; **International Patent Application Publication No.: WO 2019155485 A1** date 15/8/2019; **Japan Patent No. JP7337818B2**, publication date 09-04-2023; **US Patent No. US11661407B2**, publication date 30/05/2023.
16. THERMORESPONSIVE MOLECULES FOR CONTROLLED HEAT AND LIGHT TRANSMISSION WINDOWS AND APPLICATIONS THEREOF. Inventors: **Ayyappanpillai Ajayaghosh** (IN), Satyajit Das (IN), Suraj Soman (IN), Adersh Ashok (IN), Sreejith Shankar (IN). Assignee: Council of Scientific & Industrial Research, New Delhi (IN). **Indian Patent Application No.: 201911052506**, 2019; **PCT Application No.: PCT/IN2020/050884**, 2020.
17. A TRANSPARENT GEL ELECTROLYTE SYSTEM AND FAST SWITCHING ELECTROCHROMIC DEVICES THEREOF. Inventors: Deb, B. (IN); **Ayyappanpillai Ajayaghosh** (IN), Venugopal, R. (IN); Prabhu, G. P. T. (IN); Sreejith Shankar (IN). Assignee: Council of Scientific & Industrial Research, New Delhi (IN). Indian Patent Application 202011006474, 2020.
18. A THERMORESPONSIVE SELF-ASSEMBLED ORGANIC MATERIAL AS PHOTONIC INK AND PROCESS OF MAKING THEREOF. 2019; Inventors: Cherumukkil, S.; Nair V. C.; **Ayyappanpillai Ajayaghosh (IN)**. International Patent Application No. WO2022049605A1; US Patent Application No. US20230295489A1; JP Application No, JP2023534516A; EP Application No. EP4168501A1; CN Application No. CN116113670A.
19. SUPERHYDROPHOBIC COMPOSITE AND MULTIFUNCTIONAL APPLICATIONS THEREOF. Inventors: Sreejith Shankar (IN), Anjali Nirmala (IN), Hareesh, U. S. (IN); **Ayyappanpillai Ajayaghosh** (IN). **Indian Patent Application No.: 202011038721**, 2020; **PCT Application WO2022054087A1**, 2022; **US Patent Application No. US20230323150A1**, 2023.
20. ANTIBACTERIAL MULTI-CHARGED METAL COMPLEXES AND COATINGS WITH METAL NANOPARTICLES THEREOF. Inventors: Sreejith Shankar (IN); Anjali Nirmala (IN), Hareesh, U. S. (IN); Pottath, S. (IN); Vijayan, V. (IN); Pillai, S. (IN); Sukumaran, R. K. (IN); **Ayyappanpillai Ajayaghosh** (IN). **Indian Patent Application No. 202111015509**, 2021 (PCT Pending).
21. A PROCESS FOR CARBON DIOXIDE ADSORPTION INDUCED SWITCHABLE ANTIBACTERIAL ACTIVITY OF A SMART COVALENT ORGANIC FRAMEWORK. Inventors: **Ayyappanpillai Ajayaghosh** (IN), Arindam Mal (IN), Rakesh K. Mishra (IN), B. S. Dileep Kumar (IN), Jubi Jacob (IN), Sreejith Shankar (IN). Submitted for filing, Application 0021NF2021, 2021.

22. DISINFECTION AND *IN SITU* FLOCCULATION-SOLIDIFICATION PROCESS FOR PATHOGENIC MEDICAL WASTE DISPOSAL. Inventors: Shankar, S. P. (IN); Nair, S. S. (IN); Radhakrishnakurup, A. (IN); Vijayan, V. (IN); Mohamed, P. A. A. (IN); Hareesh, U. S. (IN); Sukumaran, R. K. (IN); Savithri, S. (IN); Devi, P. S. (IN); **Ayyappanpillai Ajayaghosh** (IN). **Indian Patent Application No. Temp./E-1/24389/2021-DEL**, 2021 (PCT Pending).
23. AN IMPROVED DISINFECTION/SOLIDIFICATION PROCESS FOR PATHOGENIC MEDICAL WASTE DISPOSAL. Inventors: Shankar, S. P. (IN); Nair, S. S. (IN); Suja P. (IN); Hareesh, U. S. (IN); Sukumaran, R. K. (IN); Savithri, S. (IN); Devi, P. S. (IN); **Ayyappanpillai Ajayaghosh** (IN). Indian Patent Application No. Temp./E-1/24367/2021-DEL, 2021 (PCT Pending).
24. FLOCCULANT BASED DISINFECTION PROCESS FOR PATHOGENIC MEDICAL WASTE DISPOSAL. Inventors: Sreejith Shankar (IN), Hareesh, U. S. (IN) ; Parameswaran, B. (IN); Sukumaran, R. K. (IN); **Ayyappanpillai Ajayaghosh** (IN). **Indian Patent Application No. 202011039050**, 2020; **PCT Application No. PCT/IN2021/050032**, 2021; **US Patent Application No. US20230320347A1**, 2023.
25. A FUNCTIONAL AND TRANSPARENT GEL ELECTROLYTE SYSTEM AND FAST SWITCHING ELECTROCHROMIC DEVICES THEREOF. Inventors: Deb, B. (IN); **Ayyappanpillai Ajayaghosh** (IN), Venugopal, R. (IN); Prabhu, G. P. T. (IN); Sreejith Shankar (IN). Assignee: Council of Scientific & Industrial Research, New Delhi (IN). **Indian Patent Application No.: 202011006474**, 2020; **PCT Application PCT/IN2021/050143**, 2021.
26. IMPROVED SINGLE VESSEL PROCESS FOR PREPARATION AND PURIFICATION OF ALKYLPHOSPHOCHOLINES AND MILTEFOSINE THEREOF. Inventors: Lankalapalli, Ravi Shankar (IN); Thangarasu, Arun Kumar (IN); **Ayyappanpillai, Ajayaghosh** (IN). **Indian Patent Application No. IN 201911003844**, 2020.
27. TEMPERATURE PROGRAMMABLE SMALL MOLECULES AND PROTOTYPES FOR THERMORESPONSIVE SMART WINDOWS AND APPLICATIONS THEREOF. Inventors: **Ayyappanpillai Ajayaghosh** (IN); Patra, D. (IN); Shankar, S. P. (IN). Patent of Addition over IN 201911052506, **Indian patent Application No. 202113045339**, 2021 (PCT Pending).
28. A PROCESS FOR THE SYNTHESIS OF BCX-1777 AND BCX-4430. Inventors: Lankalapalli Ravi Shankar (IN); Karunakaran Anitha Krishnakumar (IN); Suresh Sanjay Varma (IN); Velickakathu Omanakuttan Yadhukrishnan (IN); Kapiya Sangeeth (IN); Chekrain Valappil Shihas Ahammed (IN); Bernard Prabha (IN); Thangarasu Arun Kumar (IN); Doddramappa Doddamani Shridevi (IN); John Jubi (IN); Kokkuvayil Vasu Radhakrishnan (IN); **Ayyappanpillai Ajayaghosh** (IN). **Indian Patent Application No. 202111061664**, 2021.