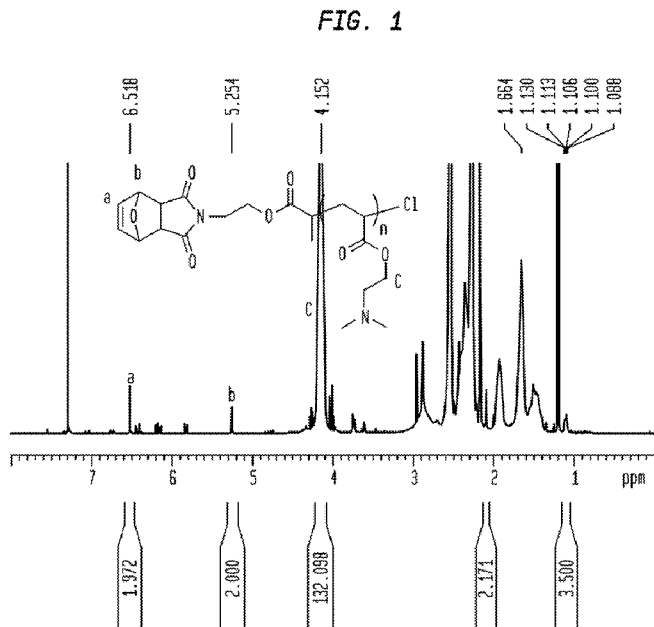




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- (81) **Designated States** (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.
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(54) **Title:** ANTIMICROBIAL COMPOUNDS AND NANOSTRUCTURES



(57) **Abstract:** The present disclosure provides compounds and nanostructures having one or more quaternary ammonium salts, compositions including the compounds and nanostructures, and methods useful for treating conditions using the compounds, nanostructures, and compositions. In at least one aspect, a compound is represented by formula (I); or a pharmaceutically acceptable salt thereof, wherein: Q is fluoro, chloro, bromo, or iodo; each of s, b, and n is independently an integer from about 10 to about 100; and each of v, j, p, z, q, x and m is independently an integer from 1 to about 20.



UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

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A. CLASSIFICATION OF SUBJECT MATTER
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 CPC - A61K 31/787, 31/795; C08F 120/34, 120/56, 2438/03

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
 See Search History document

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
 See Search History document

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
 See Search History document

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	HOLDSWORTH, CI et al., RAFT-Mediated Emulsion polymerization of Styrene with a Thermoresponsive MacroCTA, Polymer, pages 1-27; 2016; page 5, paragraph 3; page 6, paragraphs 1-3	1-20
A	VOGT, AP, Macromolecular Design Via Combinations of Controlled Radical Polymerization Techniques and Click Chemistry, Doctoral Thesis, Southern Methodist University, pages 1-73, 2009; page 72, Scheme 3.2	1-20
A	KOUMBA, AMB, Design, Synthesis and Characterisation of Amphiphilic Symmetrical Triblock Copolymers by the RAFT Process: Their Self-Organisation in Dilute and Concentrated Aqueous Solutions, Doctoral Thesis, Universitat Potsdam, pages 1-79, 2009; page 79, see structure Figure 4.4	1-20
A	ZHANG, W et al., One-Pot Synthesis of Poly(methacrylic acid-co-poly(ethylene oxide) methyl ether methacrylate)-b-polystyrene Amphiphilic Block Copolymers and Their Self-Assemblies in Water via RAFT-Mediated Radical Emulsion Polymerization. A Kinetic Study, Macromolecules, 44(19), pages 7584-7593, 2011; abstract only	1-20
A	MA, J et al., Preparation of Thermo-Responsive and Cross-Linked Fluorinated Nanoparticles via RAFT-Mediated Aqueous Polymerization in Nanoreactors, Molecules 22(152), pages 1-13, 25 January 2017; page 3, see structure, Figure 1C	1-20

Further documents are listed in the continuation of Box C. See patent family annex.

* Special categories of cited documents:	
"A" document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"E" earlier application or patent but published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
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"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	

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