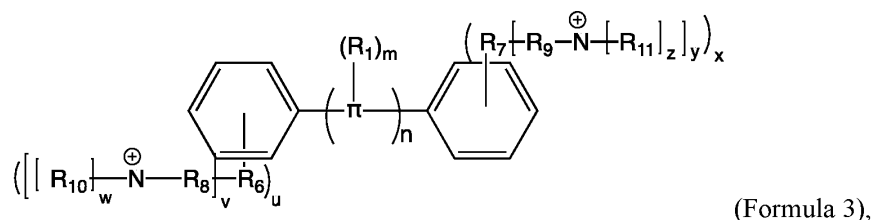


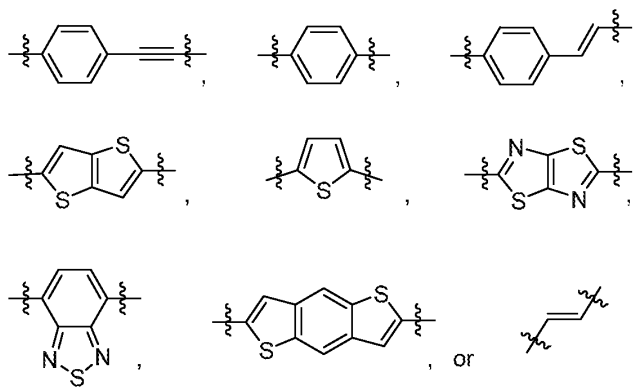
We claim:

1. A conjugated oligoelectrolyte (COE) having a structural Formula 3:



or a pharmaceutically acceptable isomer, racemate, hydrate, solvate, isotope, or salt thereof,

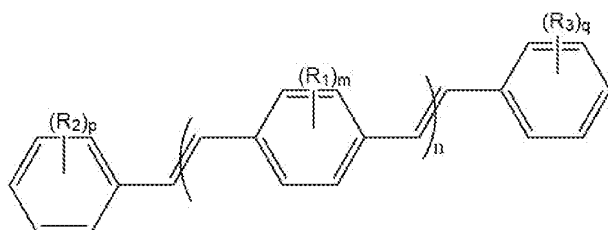
wherein π is any of the following:



wherein n is 0, 1, 2, 3, 4, 5 or 6; m is 0, 1, 2, 3 or 4 and of which R_1 is, independently, an electron withdrawing group or an electron donating group; x and u represent the numbers of substitutions on the phenyl group and are, independently, 1, 2, 3, 4, or 5; R_6 and R_7 are, independently, O or N; y and v represent the numbers of substitutions on R_7 and R_6 , respectively, and are, independently, 1 for O, and 1 or 2 for N; R_8 and R_9 are, independently, C_1 - C_{20} alkyl, C_2 - C_{20} alkenyl, C_2 - C_{20} alkynyl or aryl; $N^{\oplus}$ each represents a quaternary ammonium, a pyridinium cationic group, an imidazolium cationic group or a pyrrolidinium cationic group; z and w represent the numbers of substitutions on $N^{\oplus}$ and are, independently, 0, 1, 2, 3, 4 or 5, if

valences permit; the counter ions comprise I^- , Br^- , Cl^- , F^- , organic anion, BIm_4^- or $B(ArF)_4^-$; and R_{10} and R_{11} are, independently, C_1 - C_{20} alkyl, C_2 - C_{20} alkenyl, C_2 - C_{20} alkynyl or aryl.

2. The COE of Claim 1, wherein the compound has the structure of Formula 3-a:

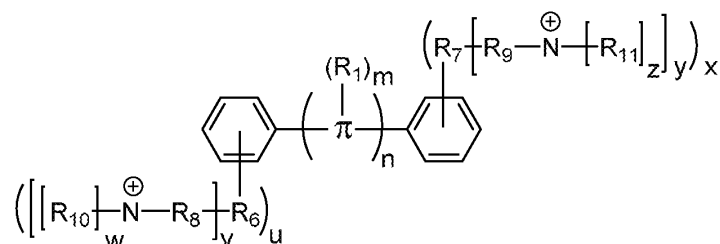


(Formula 3-a),

wherein n is 0, 1, 2, 3, 4, 5 or 6; m is 0, 1, 2, 3 or 4; R_1 is F (fluorine atom); p and q are independently 1, 2, 3, 4 or 5 and R_2 and R_3 are independently $-X(R_4)$, wherein $-X-$ represents a single bond, $-O-$, $-S-$, $-CO-$, $-COO-$, $-OCO-$, $-SO-$, $-SO_2-$, $-N(R_5)-$ or $-N(R_5)CO-$, and wherein R_4 and R_5 are the same or different and constitute a substituted C_1 - C_{20} alkyl, C_2 - C_{20} alkenyl, C_2 - C_{20} alkynyl or aryl, and the substitution is a quaternary ammonium, a pyridinium cationic group, a imidazolium cationic group or a pyrrolidinium cationic group, which is optionally substituted with a C_1 - C_{20} alkyl, C_2 - C_{20} alkenyl, C_2 - C_{20} alkynyl or aryl.

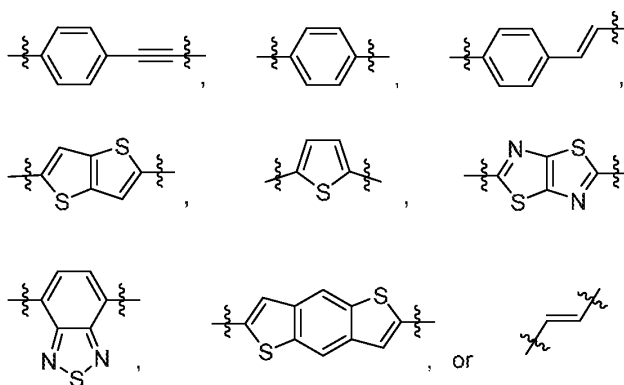
3. The COE of Claim 2, wherein m is 0.
4. The COE of any one of Claims 2-3, wherein n is 0.
5. The COE of any one of Claims 2-3, wherein n is 1.
6. The COE of any one of Claims 2-3, wherein n is 2.
7. The COE of any one of Claims 2-6, wherein p is 1, 2 or 3.
8. The COE of any one of Claims 2-7, wherein q is 1, 2 or 3.
9. The COE of any one of Claims 7-8, wherein p and q are each be 1.
10. The COE of any one of Claims 7-8, wherein p and q are each be 2.
11. The COE of any one of Claims 7-8, wherein p and q are each be 3.
12. The COE of any one of Claims 2-11, wherein R_2 and R_3 are each $-X(R_4)$.
13. The COE of Claim 12, wherein, R_2 and R_3 are each $-O(R_4)$.
14. The COE of Claim 13, wherein each R_4 is a substituted C_1 - C_{20} alkyl.
15. The COE of Claim 13, wherein each R_4 is a substituted C_3 - C_{10} alkyl.

16. The COE of Claim 13, wherein R₄ is a substituted C₄-C₈ alkyl.
17. The COE of any one of Claims 2-16, wherein Formula 3-a has an oligophenylenevinylene π -conjugated structure.
18. A conjugated oligoelectrolyte (COE) having a structural Formula 4:



(Formula 4),

or a pharmaceutically acceptable isomer, racemate, hydrate, solvate, isotope, or salt thereof,



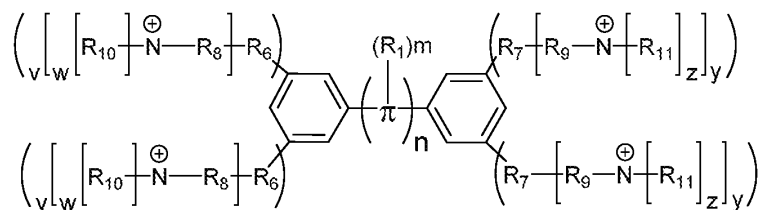
wherein π is ; n is 0, 1, 2, 3, 4, 5

or 6; m is 0, 1, 2, 3 or 4 and in which R₁ is, independently, an electron withdrawing group or an electron donating group, optionally two or more R₁ combine to form a cyclic or aromatic group; x and u represent the numbers of substitutions on the phenyl group and are, independently, 1, 2, 3, 4, or 5; R₆ and R₇ are, independently, O or N; y and v represent the numbers of substitutions on R₇ and R₆, respectively, and are, independently, 1 for O and 1 or 2 for N; R₈ and R₉ are, independently, C₁-C₂₀ alkyl, C₂-C₂₀ alkenyl, C₂-C₂₀ alkynyl or aryl; N[⊕] each represents a quaternary ammonium or a pyridinium cationic group; z and w represent the numbers of

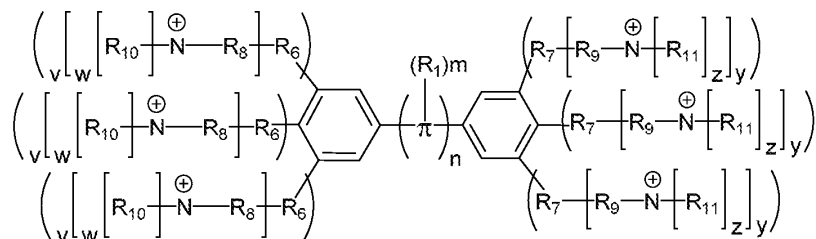
substitutions on $N^{\oplus}$ and are, independently, 0, 1, 2, 3, 4 or 5, if valences permit; R_{10} and R_{11} are, independently, C_1 - C_{20} alkyl, C_2 - C_{20} alkenyl, C_2 - C_{20} alkynyl or aryl; and the counter ions is I^- , Br^- , Cl^- , F^- , organic anion, BIm_4^- or $B(ArF)_4^-$.

19. The COE of Claim 18, wherein n is 1.
20. The COE of Claim 18, wherein n is 3.
21. The COE of Claim 18, wherein n is 5.
22. The COE of any one of Claims 18-21, wherein x is 2.
23. The COE of any one of Claims 18-21, wherein x is 3.
24. The COE of any one of Claims 18-23, wherein u is 2.
25. The COE of any one of Claims 18-23, wherein u is 3.
26. The COE of any one of Claims 18-25, wherein the phenyl group is substituted at the meta-positions.
27. The COE of any one of Claims 18-26, wherein the phenyl group is the para-position.

28. The COE of Claim 18, wherein Formula 4 has the structure:



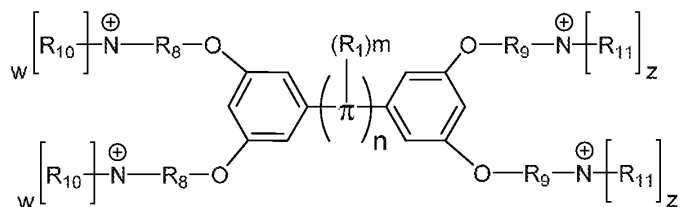
29. The COE of Claim 18, wherein Formula 4 has the structure:



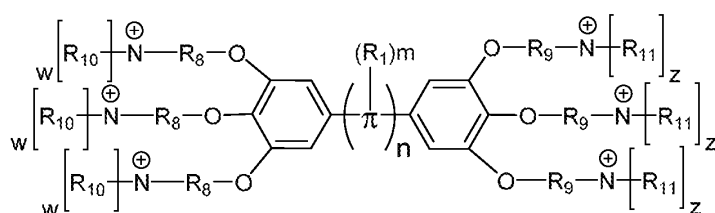
30. The COE of any one of Claims 18-29, wherein R_6 and R_7 are independently, O or N.
31. The COE of Claim 30, wherein each R_7 is O; and y and v are each 1.

32. The COE of Claim 30, wherein each R_7 is N; and y and v are each 2.

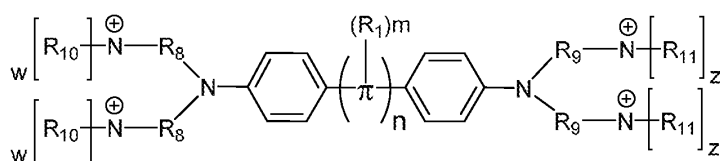
33. The COE of Claim 18, wherein Formula 4 has the structure:



34. The COE of Claim 18, wherein Formula 4 has the structure:



35. The COE of Claim 18, wherein Formula 4 has the structure:



36. The COE of any one of Claims 18-35, wherein R_8 and R_9 are each C_1 - C_{20} alkyl.

37. The COE of any one of Claims 18-35, wherein R_8 and R_9 are each C_2 - C_{10} alkyl.

38. The COE of any one of Claims 18-35, wherein R_8 and R_9 are each C_3 - C_8 alkyl.

39. The COE of any one of Claims 18-35, wherein R_8 and R_9 are each C_4 - C_6 alkyl.

40. The COE of any one of Claims 18-39, wherein each z is 3.

41. The COE of any one of Claims 18-39, wherein each is 3.

42. The COE of any one of Claims 18-41, wherein R_{10} is C_1 - C_{20} alkyl.

43. The COE of any one of Claims 18-42, wherein R_{11} is C_1 - C_{20} alkyl.

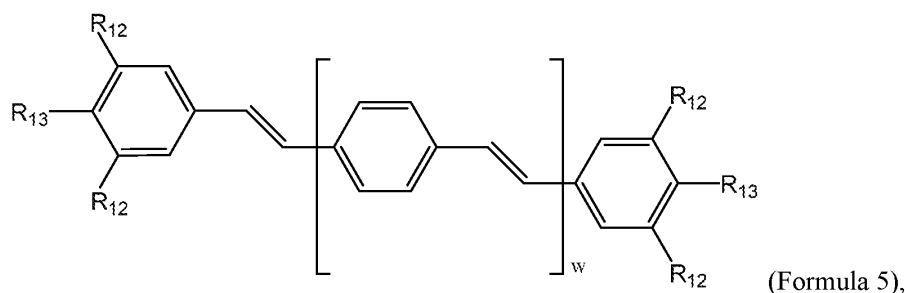
44. The COE of any one of Claims 18-43, wherein each R_{10} and each R_{11} are methyl.

45. The COE of any one of Claims 18-43, wherein each R_{10} and each R_{11} can be C_2 -

C_6 .

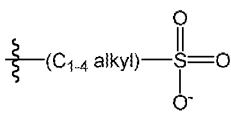
46. The COE of any one of Claims 18-45, wherein Formula 4 has identical chemical moieties on both ends of the oligophenylenevinylene.

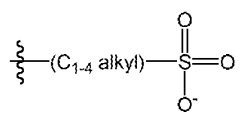
47. A conjugated oligoelectrolyte (COE) having a structural Formula 5:



or a pharmaceutically acceptable isomer, racemate, hydrate, solvate, isotope, or salt thereof,

wherein each R_{12} is independently $-O-R_{14}-N(R_{15})_3$ or $-O-R_{14}-R_{17}$; each R_{13} is independently H or R_{12} ; R_{14} and R_{16} are independently C_2-C_{10} alkyl; each R_{15} is independently

C_1-C_{10} alkyl, hydroxyalkyl, aminoalkyl,  or $-((CH_2)_2-O)_{1-4}-CH_3$, or two R_{15} are taken together with the nitrogen to which they are attached to form a monocyclic N-linked heterocyclyl or a bicyclic N-linked heterocyclyl; R_{17} is an unsubstituted or substituted N-linked pyridinyl, $-(C_2-C_3 \text{ alkyl})N(R_{18})_3$ or $-NH-(=NH)NH_2$; each R_{18} is independently C_2-C_{10} alkyl,

hydroxyalkyl, aminoalkyl,  or $-((CH_2)_2-O)_{1-4}-CH_3$; w is 0, 1 or 2; and the counter ions include I^- , Br^- , Cl^- , F^- , organic anion, BIm_4^- or $B(ArF)_4^-$.

48. The COE of Claim 47, wherein R_{12} is $-O-R_{14}-N(R_{15})_3$.

49. The COE of Claim 47, wherein R_{14} is C_2-C_{10} alkyl.

50. The COE of Claim 47, wherein R_{14} is $-(CH_2)_2-$.

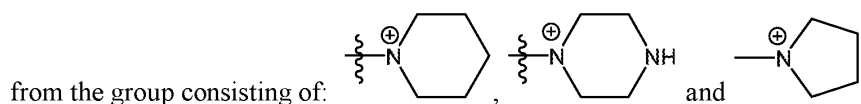
51. The COE of Claim 47, wherein R_{14} is $-(CH_2)_3-$.

52. The COE of Claim 47, wherein R_{14} is $-(CH_2)_4-$.

53. The COE of Claim 47, wherein R_{14} is $-(CH_2)_5-$.
54. The COE of Claim 47, wherein R_{14} is $-(CH_2)_6-$.
55. The COE of Claim 47, wherein R_{14} is $-(CH_2)_7-$.
56. The COE of Claim 47, wherein R_{14} is $-(CH_2)_8-$.
57. The COE of Claim 47, wherein R_{14} is $-(CH_2)_9-$.
58. The COE of Claim 47, wherein R_{14} is $-(CH_2)_{10}-$.
59. The COE of any one of Claims 48-58, wherein each R_{15} is independently C_1 - C_{10} alkyl.
60. The COE of Claim 59, wherein each R_{15} is methyl.
61. The COE of Claim 59, wherein each R_{15} is C_2 - C_{10} alkyl.
62. The COE of Claim 59, wherein each R_{15} is C_2 - C_8 alkyl.
63. The COE of Claim 59, wherein each R_{15} is C_4 - C_6 alkyl.
64. The COE of any one of Claims 48-58, wherein two R_{15} are taken together with the nitrogen to which they are attached to form a monocyclic N-linked heterocyclyl; and the remaining R_{15} is C_1 - C_{10} alkyl.

65. The COE of Claim 64, wherein the monocyclic N-linked heterocyclyl is 5-membered or a 6-membered monocyclic N-linked heterocyclyl.

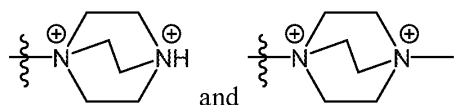
66. The COE of Claim 64, wherein the monocyclic N-linked heterocyclyl is selected



67. The COE of any one of Claims 48-58, wherein two R_{15} are taken together with the nitrogen to which they are attached to form a bicyclic N-linked heterocyclyl; and the remaining R_{15} is C_1 - C_{10} alkyl.

68. The COE of Claim 67, wherein the bicyclic N-linked heterocyclyl is a 7- or 8-membered bicyclic N-linked heterocyclyl.

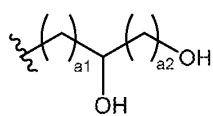
69. The COE of Claim 67, wherein the bicyclic N-linked heterocyclyl is



70. The COE of any one of Claims 48-58, wherein one or more R₁₅ groups is hydroxyalkyl.

71. The COE of Claim 70, wherein the hydroxyalkyl has the structure $-(CH_2)_{1-4}-OH$.

72. The COE of Claim 70, wherein the hydroxyalkyl has the structure

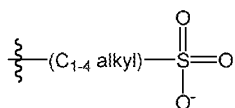


, wherein a1 and a2 are independently 1 or 2.

73. The COE of any one of Claims 48-58, wherein one or more R₁₅ groups is aminoalkyl.

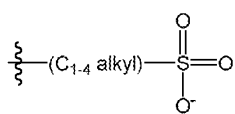
74. The COE of Claim 73, wherein the aminoalkyl has the structure $-(CH_2)_{1-4}-NH_2$.

75. The COE of any one of Claims 48-58, wherein one or more R₁₅ groups is



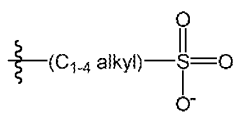
76. The COE of any one of Claims 70-75, wherein the remaining R₁₅ groups is C₁-C₁₀ alkyl.

77. The COE of Claim 76, wherein one R₁₅ group is hydroxyalkyl, aminoalkyl,



or $-((CH_2)_2-O)_{1-4}-CH_3$; and one R₁₅ groups are independently C₁-C₁₀ alkyl.

78. The COE of Claim 76, wherein one R₁₅ group is hydroxyalkyl, aminoalkyl,



or $-((CH_2)_2-O)_{1-4}-CH_3$; and two R₁₅ groups are independently C₁-C₁₀ alkyl.

79. The COE of Claim 77 or 78, wherein the C₁-C₁₀ alkyl is C₄-C₆ alkyl.

80. The COE of Claim 77 or 78, wherein the C₁-C₁₀ alkyl is C₁-C₄ alkyl.

81. The COE of Claim 47, each R₁₂ is independently $-O-R_{14}-R_{17}$.

82. The COE of Claim 81, wherein R₁₄ is C₂-C₁₀ alkyl.

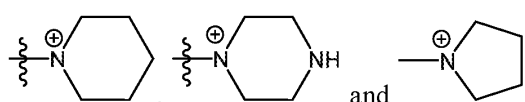
83. The COE of Claim 81, wherein R₁₄ is $-(CH_2)_2-$.

84. The COE of Claim 81, wherein R₁₄ is $-(CH_2)_3-$.

85. The COE of Claim 81, wherein R₁₄ is $-(CH_2)_4-$.

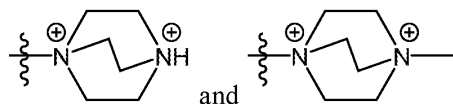
86. The COE of Claim 81, wherein R_{14} is $-(CH_2)_5-$.
87. The COE of Claim 81, wherein R_{14} is $-(CH_2)_6-$.
88. The COE of Claim 81, wherein R_{14} is $-(CH_2)_7-$.
89. The COE of Claim 81, wherein R_{14} is $-(CH_2)_8-$.
90. The COE of Claim 81, wherein R_{14} is $-(CH_2)_9-$.
91. The COE of Claim 81, wherein R_{14} is $-(CH_2)_{10}-$.
92. The COE of any one of Claims 81-91, wherein R_{17} is an unsubstituted N-linked pyridinyl.
93. The COE of any one of Claims 81-91, wherein R_{17} is a substituted N-linked pyridinyl.
94. The COE of any one of Claims 81-91, wherein R_{17} is $-(C_2-C_3 \text{ alkyl})N(R_{18})_3$.
95. The COE of Claim 94, wherein each R_{18} is independently C_1-C_{10} alkyl.
96. The COE of Claim 95, wherein each R_{18} is methyl.
97. The COE of Claim 95, wherein each R_{18} is C_2-C_{10} alkyl.
98. The COE of Claim 95, wherein each R_{18} is C_2-C_8 alkyl.
99. The COE of Claim 95, wherein each R_{18} is C_4-C_6 alkyl.
100. The COE of Claim 94, wherein two R_{18} are taken together with the nitrogen to which they are attached to form a monocyclic N-linked heterocyclyl; and the remaining R_{18} is C_1-C_{10} alkyl.
101. The COE of Claim 100, wherein the monocyclic N-linked heterocyclyl is 5-membered or a 6-membered monocyclic N-linked heterocyclyl.

102. The COE of Claim 100, wherein the monocyclic N-linked heterocyclyl is selected from the group consisting of:



103. The COE of Claim 94, wherein two R_{18} are taken together with the nitrogen to which they are attached to form a bicyclic N-linked heterocyclyl; and the remaining R_{18} is C_1-C_{10} alkyl.
104. The COE of Claim 103, wherein the bicyclic N-linked heterocyclyl is a 7- or 8-membered bicyclic N-linked heterocyclyl.

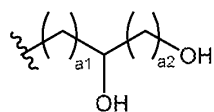
105. The COE of Claim 103, wherein the bicyclic N-linked heterocyclyl is



106. The COE of Claim 94, wherein one or more R_{18} groups is hydroxyalkyl.

107. The COE of Claim 106, wherein the hydroxyalkyl has the structure $-(CH_2)_{1-4}-OH$.

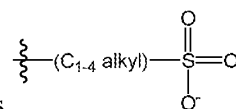
108. The COE of Claim 106, wherein the hydroxyalkyl has the structure



, wherein a_1 and a_2 are independently 1 or 2.

109. The COE of Claim 94, wherein one or more R_{18} groups is aminoalkyl.

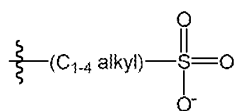
110. The COE of Claim 94, wherein the aminoalkyl has the structure $-(CH_2)_{1-4}-NH_2$.



111. The COE of Claim 94, wherein one or more R_{18} groups is

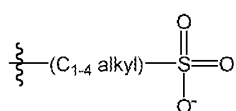
112. The COE of any one of Claims 106-110, wherein the remaining R_{18} groups is C_1-C_{10} alkyl.

113. The COE of Claim 94, wherein one R_{18} group is hydroxyalkyl, aminoalkyl,



or $-((CH_2)_2-O)_{1-4}-CH_3$; and one R_{18} groups are independently C_1-C_{10} alkyl.

114. The COE of Claim 94, wherein one R_{18} group is hydroxyalkyl, aminoalkyl,



or $-((CH_2)_2-O)_{1-4}-CH_3$; and two R_{18} groups are independently C_1-C_{10} alkyl.

115. The COE of Claim 113 or 114, wherein the C_1-C_{10} alkyl is C_4-C_6 alkyl.

116. The COE of Claim 113 or 114, wherein the C_1-C_{10} alkyl is C_1-C_4 alkyl.

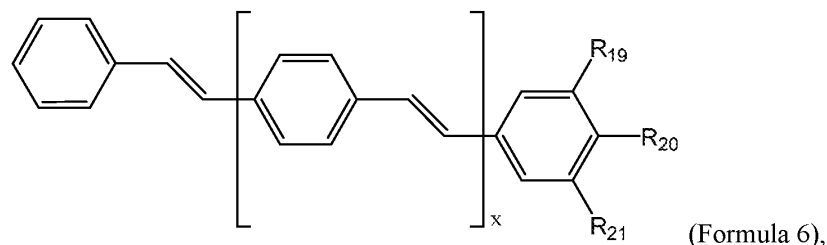
117. The COE of any one of Claims 81-91, wherein R_{17} is $-NH-(=NH)NH_2$.

118. The COE of any one of Claim 47-117, wherein w is 0.

119. The COE of any one of Claim 47-117, wherein w is 1.

120. The COE of any one of Claim 47-117, wherein w is 2.

121. A conjugated oligoelectrolyte (COE) having a structural Formula 6:



or a pharmaceutically acceptable isomer, racemate, hydrate, solvate, isotope, or salt thereof,

wherein R_{19} , R_{20} and R_{21} are independently $-\text{O}-R_{22}-\text{N}(\text{R}_{23})_3$ or $-\text{O}-R_{24}-R_{25}$; each R_{22} and each R_{24} is independently $\text{C}_2\text{-C}_{10}$ alkyl; each R_{23} is independently $\text{C}_1\text{-C}_{10}$ alkyl, hydroxyalkyl,

aminoalkyl, or $-\text{O}-\text{R}_{22}-\text{N}(\text{R}_{23})_3$ or $-\text{O}-R_{24}-R_{25}$; or two R_{23} are taken together with the nitrogen to which they are attached to form a monocyclic N-linked heterocyclyl or a bicyclic N-linked heterocyclyl; R_{25} is an unsubstituted or substituted N-linked pyridinyl, $-(\text{C}_{2-3} \text{ alkyl})\text{N}(\text{R}_{26})_3$ or $-\text{NH}-(=\text{NH})\text{NH}_2$; each R_{26} is independently $\text{C}_2\text{-C}_{10}$ alkyl, hydroxyalkyl, aminoalkyl,

or $-\text{O}-\text{R}_{22}-\text{N}(\text{R}_{23})_3$ or $-\text{O}-R_{24}-R_{25}$; x is 0, 1 or 2; and the counter ions include I^- , Br^- , Cl^- , F^- , organic anion, BIm_4^+ or $\text{B}(\text{ArF})_4^+$.

122. The COE of Claim 121, wherein each of R_{19} , R_{20} and R_{21} are independently $-\text{O}-R_{22}-\text{N}(\text{R}_{23})_3$.

123. The COE of Claim 122, wherein R_{22} is $\text{C}_2\text{-C}_{10}$ alkyl.

124. The COE of Claim 122, wherein R_{22} is $-(\text{CH}_2)_2-$.

125. The COE of Claim 122, wherein R_{22} is $-(\text{CH}_2)_3-$.

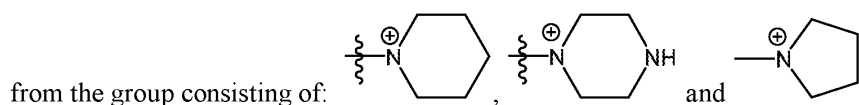
126. The COE of Claim 122, wherein R_{22} is $-(\text{CH}_2)_4-$.

127. The COE of Claim 122, wherein R_{22} is $-(\text{CH}_2)_5-$.

128. The COE of Claim 122, wherein R_{22} is $-(\text{CH}_2)_6-$.

129. The COE of Claim 122, wherein R_{22} is $-(CH_2)_7-$.
130. The COE of Claim 122, wherein R_{22} is $-(CH_2)_8-$.
131. The COE of Claim 122, wherein R_{22} is $-(CH_2)_9-$.
132. The COE of Claim 122, wherein R_{22} is $-(CH_2)_{10}-$.
133. The COE of any one of Claims 122-132, wherein each R_{23} is independently C_1 - C_{10} alkyl.
134. The COE of any one of Claims 122-132, wherein each R_{23} is methyl.
135. The COE of any one of Claims 122-132, wherein each R_{23} is C_2 - C_{10} alkyl.
136. The COE of any one of Claims 122-132, wherein each R_{23} is C_2 - C_8 alkyl.
137. The COE of any one of Claims 122-132, wherein each R_{23} is C_4 - C_6 alkyl.
138. The COE of any one of Claims 122-132, wherein two R_{23} are taken together with the nitrogen to which they are attached to form a monocyclic N-linked heterocyclyl; and the remaining R_{18} is C_1 - C_{10} alkyl.
139. The COE of Claim 138, wherein the monocyclic N-linked heterocyclyl is 5-membered or a 6-membered monocyclic N-linked heterocyclyl.

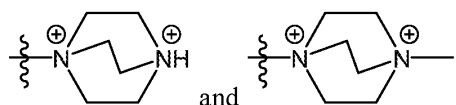
140. The COE of Claim 138, wherein the monocyclic N-linked heterocyclyl is selected



141. The COE of any one of Claims 122-132, wherein two R_{23} are taken together with the nitrogen to which they are attached to form a bicyclic N-linked heterocyclyl; and the remaining R_{18} is C_1 - C_{10} alkyl.

142. The COE of Claim 141, wherein the bicyclic N-linked heterocyclyl is a 7- or 8-membered bicyclic N-linked heterocyclyl.

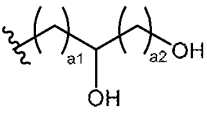
143. The COE of Claim 141, wherein the bicyclic N-linked heterocyclyl is



144. The COE of any one of Claims 122-132, wherein one or more R_{23} groups is hydroxyalkyl.

145. The COE of Claim 144, wherein the hydroxyalkyl has the structure $-(CH_2)_{1-4}-OH$.

146. The COE of Claim 144, wherein the hydroxyalkyl has the structure

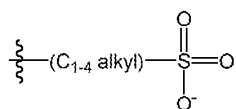


, wherein a_1 and a_2 are independently 1 or 2.

147. The COE of any one of Claims 122-132, wherein one or more R_{23} groups is aminoalkyl.

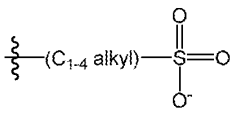
148. The COE of Claim 147, wherein the aminoalkyl has the structure $-(CH_2)_{1-4}-NH_2$.

149. The COE of any one of Claims 122-132, wherein one or more R_{23} groups is



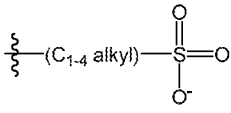
150. The COE of any one of Claims 144-149, wherein the remaining R_{18} groups is C_1-C_{10} alkyl.

151. The COE of any one of Claims 144-149, wherein one R_{23} group is hydroxyalkyl, aminoalkyl,



or $-((CH_2)_2-O)_{1-4}-CH_3$; and one R_{23} groups are independently C_1-C_{10} alkyl.

152. The COE of any one of Claims 144-149, wherein one R_{18} group is hydroxyalkyl, aminoalkyl,



or $-((CH_2)_2-O)_{1-4}-CH_3$; and two R_{23} groups are independently C_1-C_{10} alkyl.

153. The COE of Claim 151 or 152, wherein the C_1-C_{10} alkyl is C_4-C_6 alkyl.

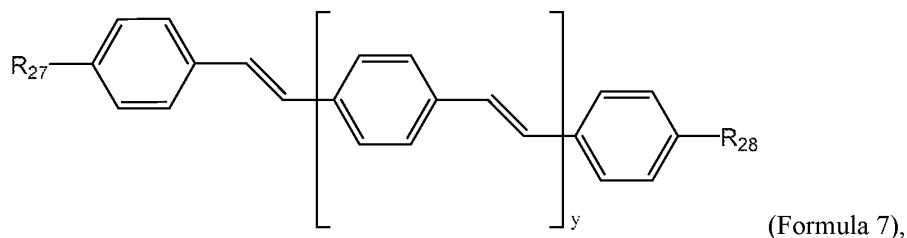
154. The COE of Claim 151 or 152, wherein the C_1-C_{10} alkyl is C_1-C_4 alkyl.

155. The COE of Claim 121, wherein of R_{19} , R_{20} and R_{21} are independently $-O-R_{24}-R_{25}$.

156. The COE of Claim 155, wherein R_{24} is C_2-C_{10} alkyl.

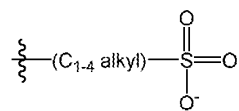
157. The COE of Claim 155, wherein R_{24} is $-(CH_2)_2-$.

158. The COE of Claim 155, wherein R_{24} is $-(CH_2)_3-$.
159. The COE of Claim 155, wherein R_{24} is $-(CH_2)_4-$.
160. The COE of Claim 155, wherein R_{24} is $-(CH_2)_5-$.
161. The COE of Claim 155, wherein R_{24} is $-(CH_2)_6-$.
162. The COE of Claim 155, wherein R_{24} is $-(CH_2)_7-$.
163. The COE of Claim 155, wherein R_{24} is $-(CH_2)_8-$.
164. The COE of Claim 155, wherein R_{24} is $-(CH_2)_9-$.
165. The COE of Claim 155, wherein R_{24} is $-(CH_2)_{10}-$.
166. The COE of any one of Claims 155-165, wherein R_{25} is an unsubstituted N-linked pyridinyl.
167. The COE of any one of Claims 155-165, wherein R_{25} is a substituted N-linked pyridinyl.
168. The COE of any one of Claims 155-165, wherein R_{25} is $-(C_{2-3} \text{ alkyl})N(R_{26})_3$.
169. The COE of any one of Claims 155-165, wherein R_{25} is $-NH-(=NH)NH_2$.
170. The COE of any one of Claims 121-169, wherein x is 0.
171. The COE of any one of Claims 121-169, wherein x is 1.
172. A conjugated oligoelectrolyte (COE) having a structural Formula 7:



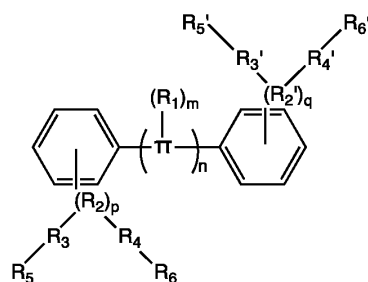
or a pharmaceutically acceptable isomer, racemate, hydrate, solvate, isotope, or salt thereof,

wherein R_{27} and R_{28} are independently $-N-(R_{29})-N(R_{30})_3$; R_{29} is C_2-C_{10} alkyl; each R_{30} is

independently C_1-C_{10} alkyl, hydroxyalkyl, aminoalkyl,  or $-((CH_2)_2-O)_{1-4}-CH_3$, or two R_{30} are taken together with the nitrogen to which they are attached to form a

monocyclic N-linked heterocyclyl or a bicyclic N-linked heterocyclyl; y is 1 or 2; and the counter ions include I⁻, Br⁻, Cl⁻, F⁻, organic anion, BIm₄⁻ or B(ArF)₄⁻.

173. The COE of Claim 155, wherein R₂₉ is -(CH₂)₂-.
174. The COE of Claim 155, wherein R₂₉ is -(CH₂)₃-.
175. The COE of Claim 155, wherein R₂₉ is -(CH₂)₄-.
176. The COE of Claim 155, wherein R₂₉ is -(CH₂)₅-.
177. The COE of Claim 155, wherein R₂₉ is -(CH₂)₆-.
178. The COE of Claim 155, wherein R₂₉ is -(CH₂)₇-.
179. The COE of Claim 155, wherein R₂₉ is -(CH₂)₈-.
180. The COE of Claim 155, wherein R₂₉ is -(CH₂)₉-.
181. The COE of Claim 155, wherein R₂₉ is -(CH₂)₁₀-.
182. The COE of any one of Claims 155-181, wherein each R₃₀ is independently C₁-C₁₀ alkyl.
183. The COE of any one of Claims 155-181, wherein each R₃₀ is methyl.
184. The COE of any one of Claims 155-181, wherein each R₃₀ is C₂-C₁₀ alkyl.
185. The COE of any one of Claims 155-181, wherein each R₃₀ is C₂-C₈ alkyl.
186. The COE of any one of Claims 155-181, wherein each R₃₀ is C₄-C₆ alkyl.
187. The COE of any one of Claims 172-186, wherein y is 1.
188. The COE of any one of Claims 172-186, wherein y is 2.
189. A conjugated oligoelectrolyte (COE) having a structural Formula 1:

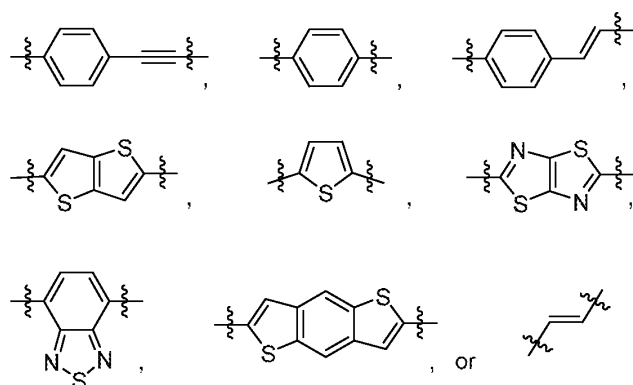


(Formula 1),

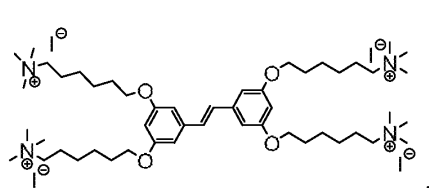
or a pharmaceutically acceptable isomer, racemate, hydrate, solvate, isotope, or salt thereof,

wherein n is 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10; π represents a pi conjugation structure; m is 0, 1, 2, 3 or 4 and of which R_1 is, independently, an electron withdrawing group, halide, or a substituted or unsubstituted C_1 - C_{20} alkyl, C_2 - C_{20} alkenyl, C_2 - C_{20} alkynyl or aryl; p and q are, independently, 1, 2, 3, 4 or 5 and of which R_2 and R_2' are, independently, C_1 - C_{20} alkynyl chain, $-O-$, $-S-$, $-CO-$, $-COO-$, $-OCO-$, $-SO-$, $-SO_2-$, $-N-$ or $-NCO-$, and wherein R_3 , R_3' , R_4 and R_4' are the same or different and are a straight-chain, branched or cyclic, substituted or unsubstituted C_1 - C_{20} alkyl, C_2 - C_{20} alkenyl, C_2 - C_{20} alkynyl or aryl; R_5 , R_5' , R_6 and R_6' are the same or different, a cationic group comprising ammonium, pyridinium or phosphonium, or an anionic group comprising $-CO_2^-$ or $-SO_3^-$; and one or more of the unsubstituted aromatic carbon atoms are optionally replaced by nitrogen, oxygen, sulfur atoms, or a combination thereof.

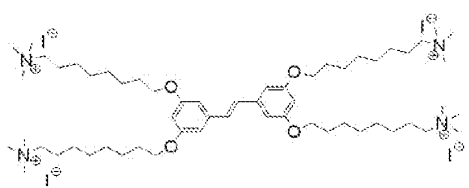
190. The COE of Claim 189, wherein π is any one of the following:



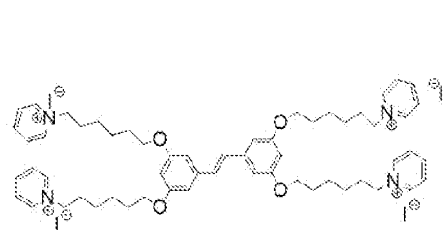
191. A COE a structure selected from the group consisting of:



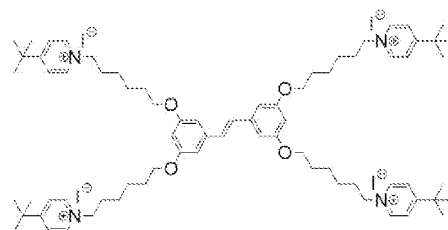
Formula A ("COE2-2C")



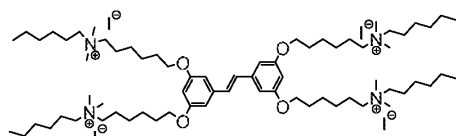
Formula B ("COE2-2C-C8")



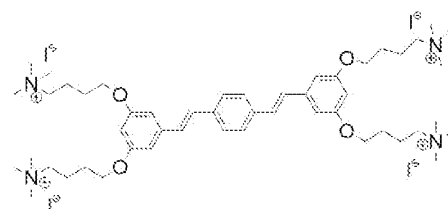
Formula C ("COE2-2py")



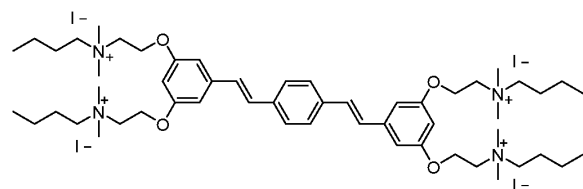
Formula D ("COE2-2B")



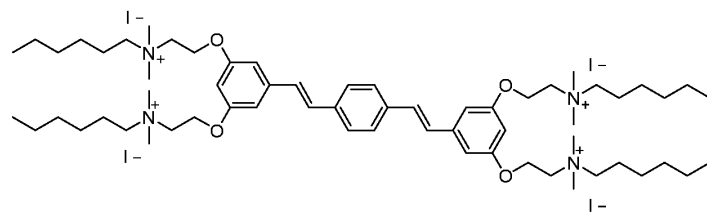
Formula E ("COE2-2hexyl")



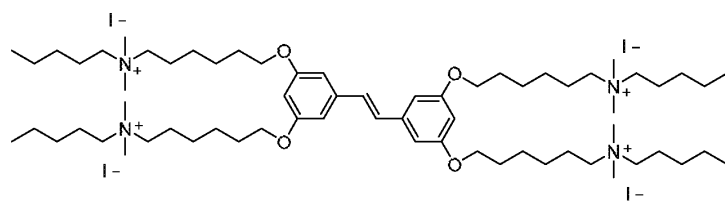
Formula F ("COE2-3C-C4")



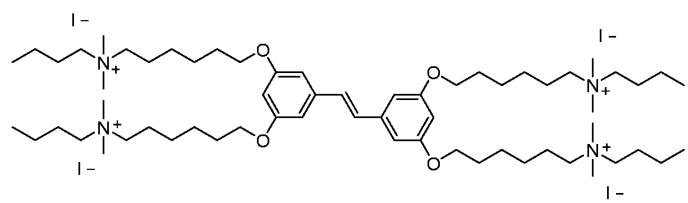
Formula G ("COE2-3C-C2butyl")



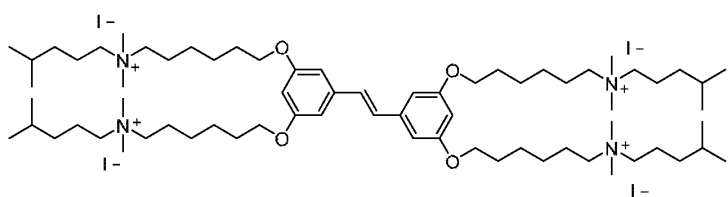
Formula H ("COE2-3C-C2hexyl")



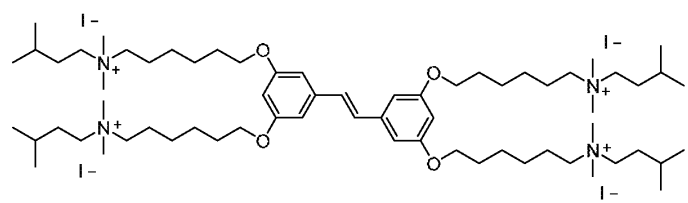
Formula J ("COE2-2pentyl")



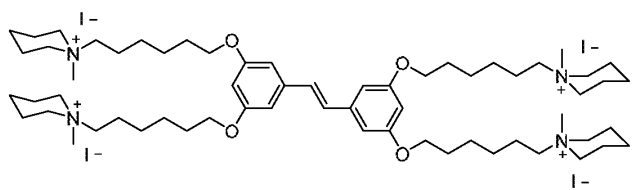
Formula K ("COE2-2butyl")



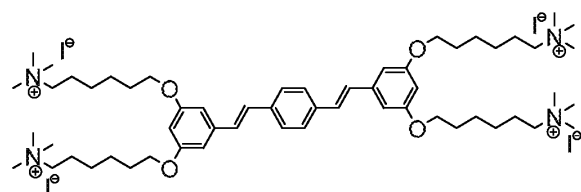
Formula L ("COE2-2isohexyl")



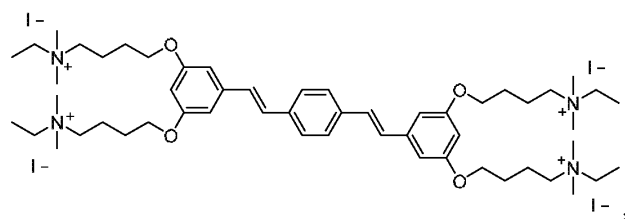
Formula M ("COE2-2isopentyl")



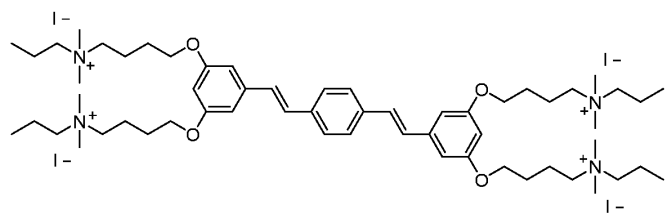
Formula N ("COE2-2pip")



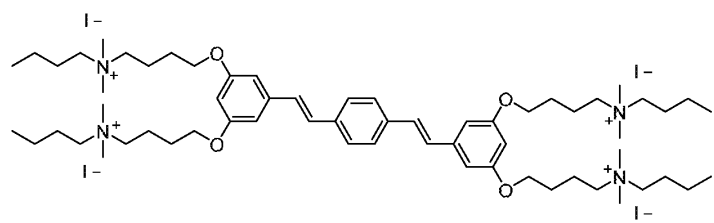
Formula O ("COE2-3C")



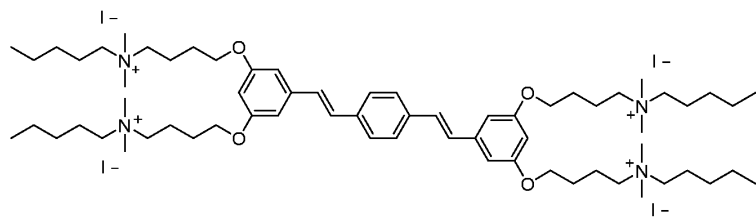
Formula P (“COE2-3C-C4ethyl”)



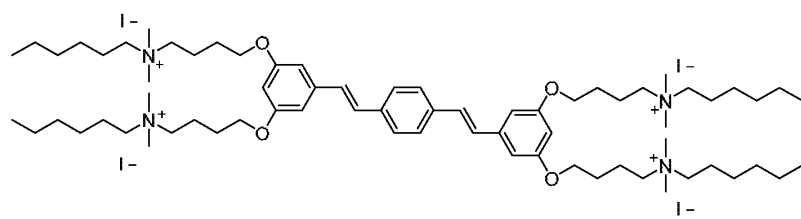
Formula Q (“COE2-3C-C4propyl”)



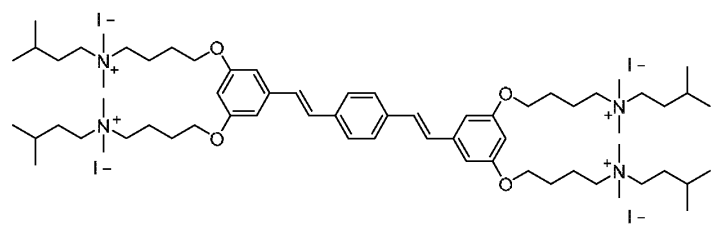
Formula R (“COE2-3C-C4butyl”)



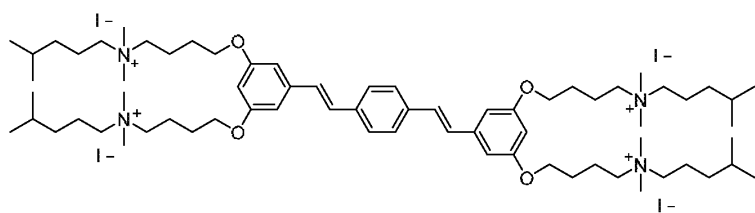
Formula S (“COE2-3C-C4pentyl”)



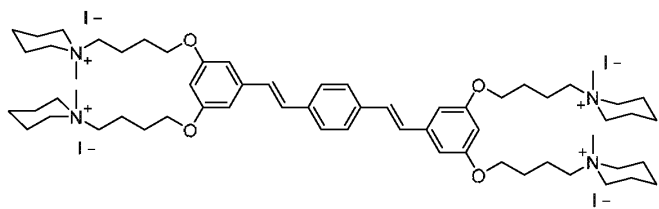
Formula T (“COE2-3C-C4hexyl”)



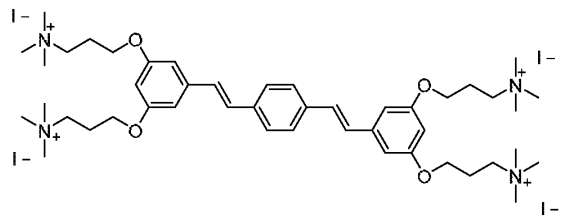
Formula U ("COE2-3C-C4isopentyl")



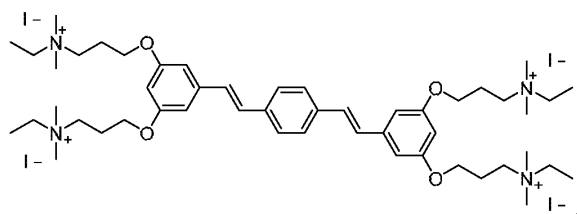
Formula V ("COE2-3C-C4isohexyl")



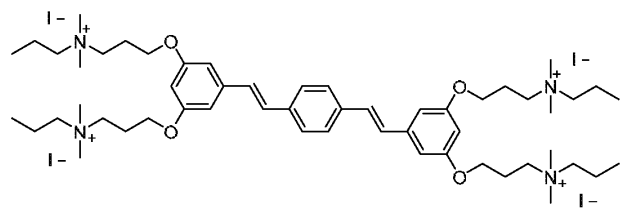
Formula W ("COE2-3C-C4pip")



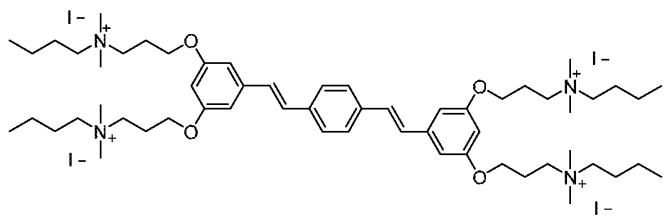
Formula X ("COE2-3C-C3")



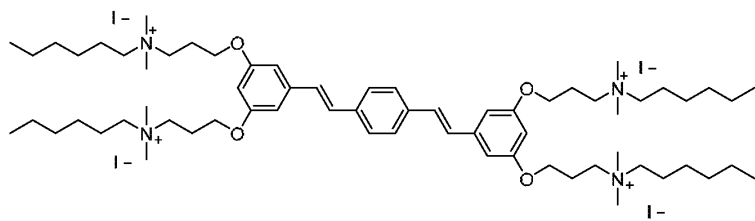
Formula Y ("COE2-3C-C3ethyl")



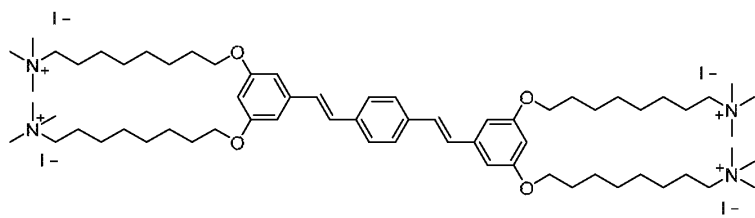
Formula Z ("COE2-3C-C3propyl")



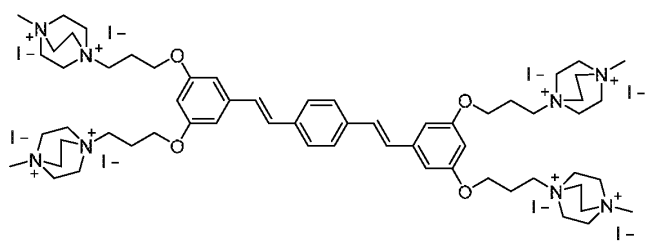
Formula AA ("COE2-3C-C3butyl")



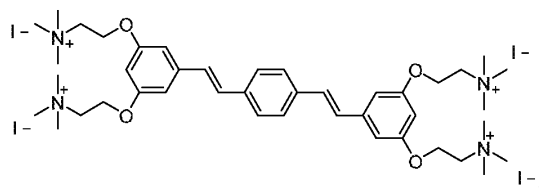
Formula BB ("COE2-3C-C3hexyl")



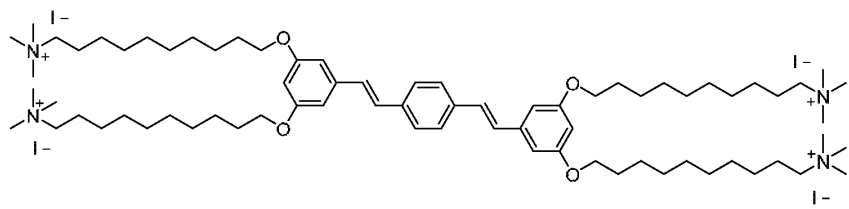
Formula CC ("COE2-3C-C8")



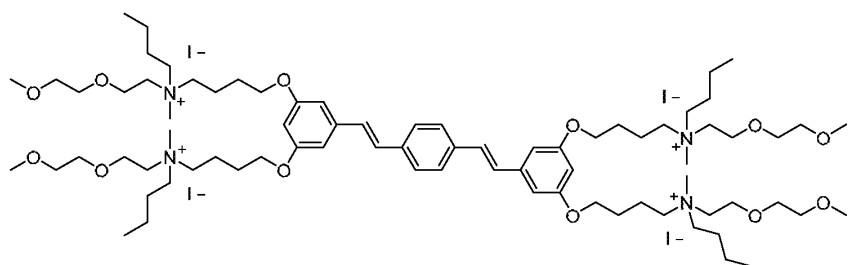
Formula DD ("COE2-3C-C3DABCO")



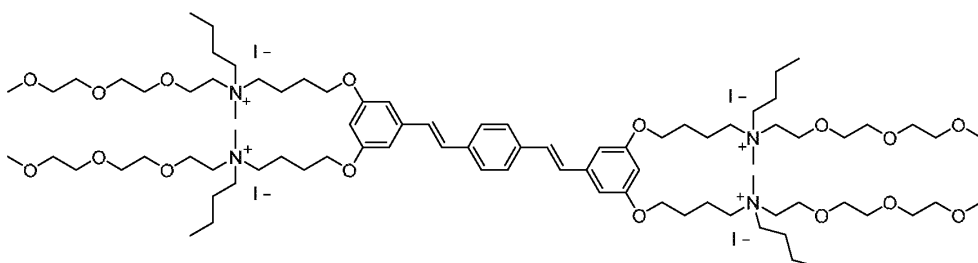
Formula EE ("COE2-3C-C2")



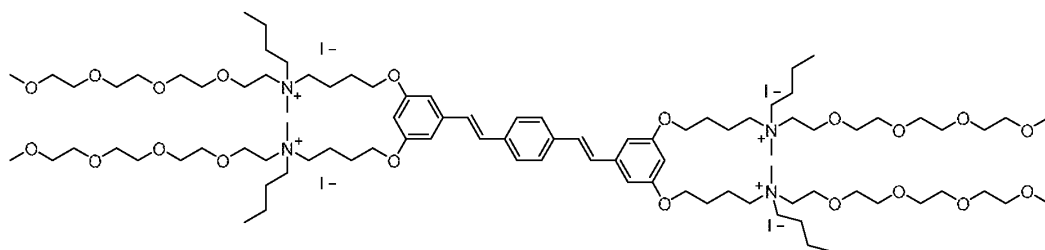
Formula FF ("COE2-3C-C10")



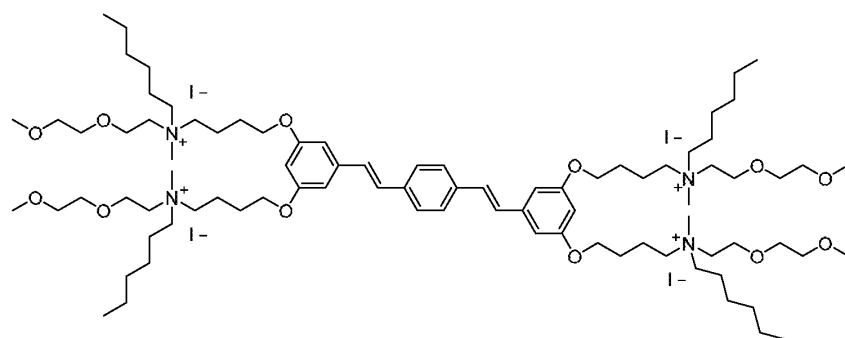
Formula GG ("COE2-3C-C4MeC4P2")



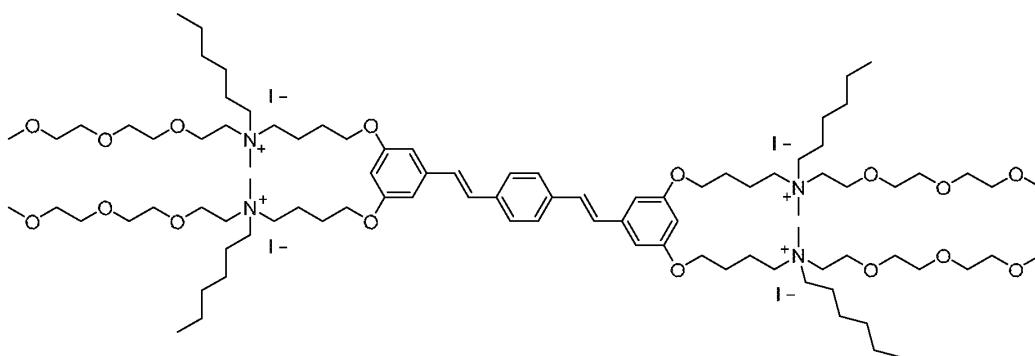
Formula HH ("COE2-3C-C4MeC4P3")



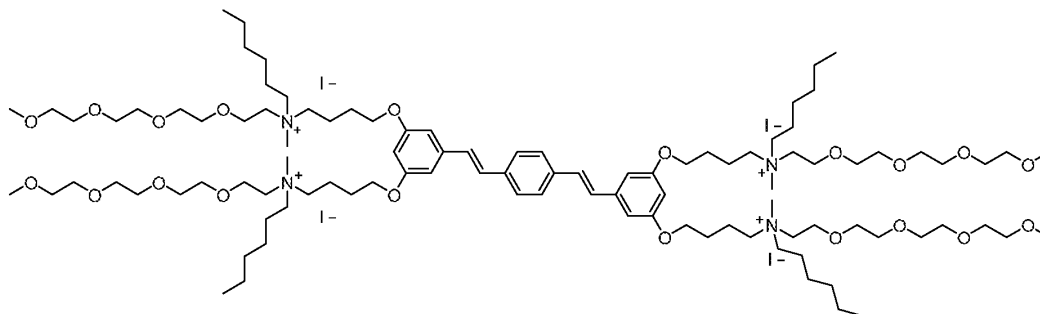
Formula II ("COE2-3C-C4MeC4P4")



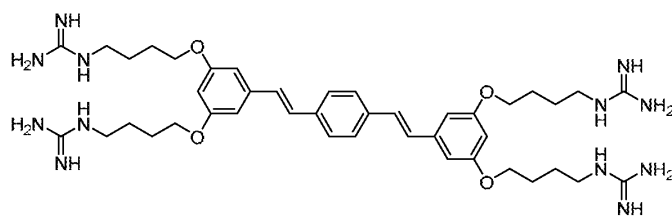
Formula JJ ("COE2-3C-C4MeC6P2")



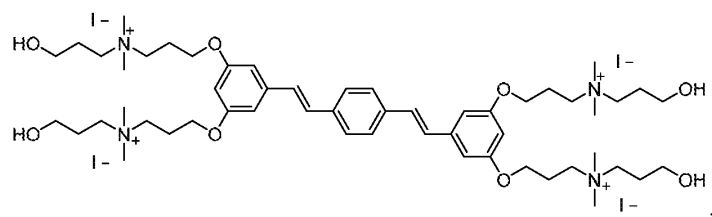
Formula KK ("COE2-3C-C4MeC6P3")



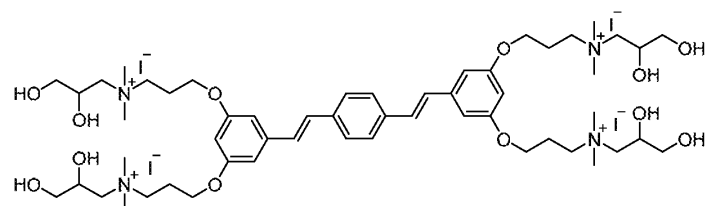
Formula LL ("COE2-3C-C4MeC6P4")



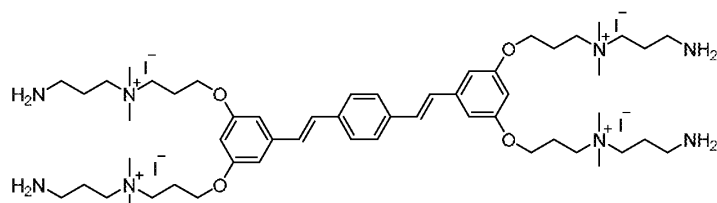
Formula MM ("COE 2-3C-C4guanidine")



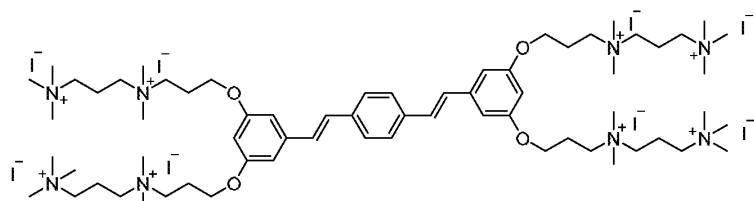
Formula NN ("COE2-3C-C3propyl-OH")



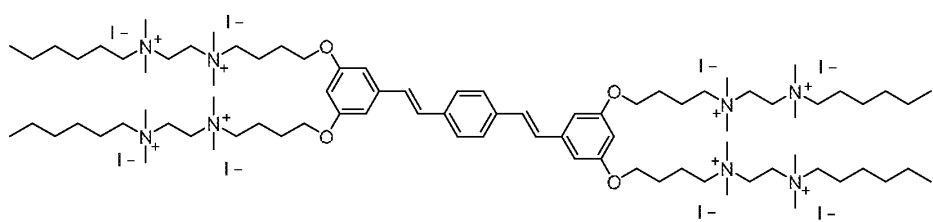
Formula OO ("COE2-3C-C3glycerol")



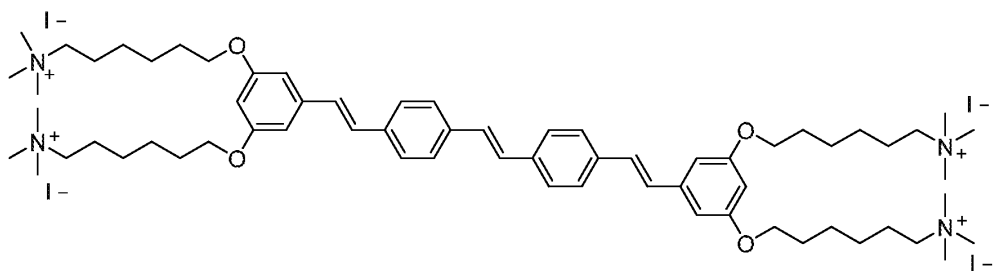
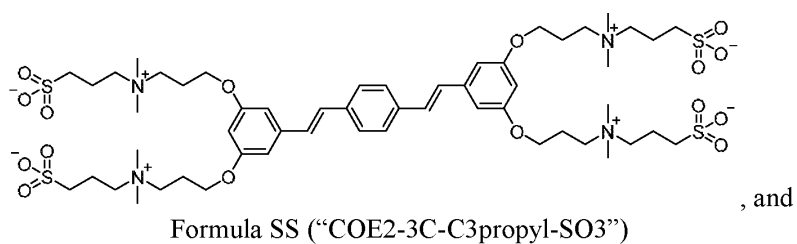
Formula PP ("COE2-3C-C3propyl-NH2")



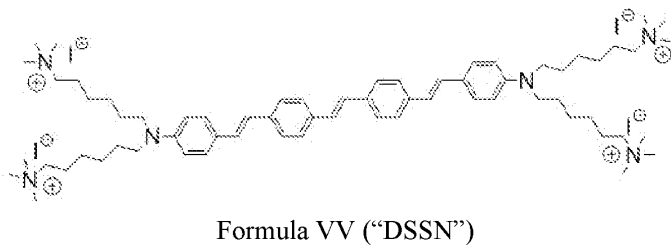
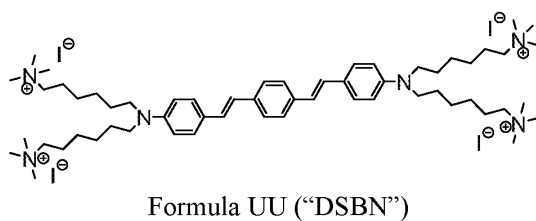
Formula QQ ("COE2-3C-C3propyl-NMe3")

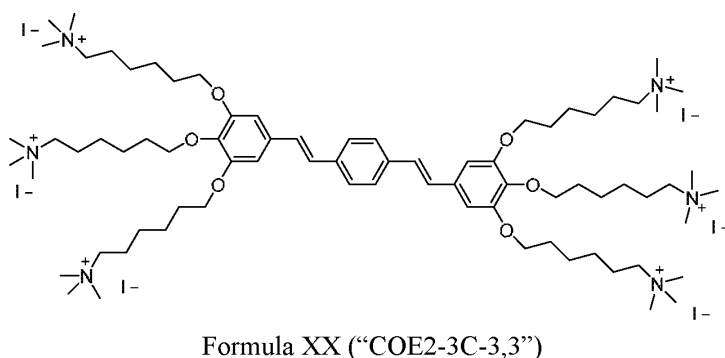
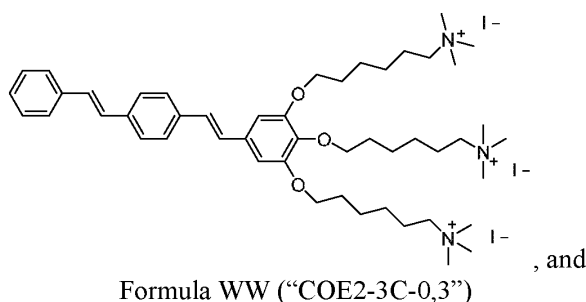


Formula RR ("COE2-3C-C4-en-hexyl")

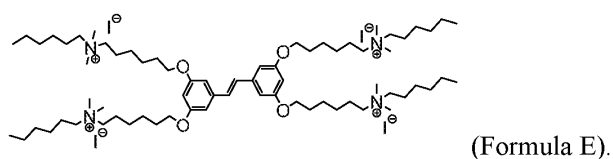


192. A COE having a structure selected from the group consisting of:





193. The COE of Claim 192 having a structure of



194. The COE of any one of Claims 1-193, having a minimum inhibition concentration (MIC) of no greater than 1 $\mu\text{g/mL}$, between 1-5 $\mu\text{g/mL}$, or between 5-15 $\mu\text{g/mL}$ against one or more bacteria selected from the group consisting of ST ATCC 14028, EC ATCC 25922, PA ATCC 10145, KPN ATCC13883, MRSA USA300, MSSA Newman, MRSA MT3302, MRSA MT3315, and MSSA MT3305.

195. A pharmaceutical composition comprising an effective amount of the COE of any one of Claims 1-194; and a pharmaceutically acceptable excipient.

196. A method of treating, reducing the severity of and/or slowing the progression of a bacterial infection in a mammalian subject comprising

administering an effective amount of a conjugated oligoelectrolyte (COE) of any one of Claims 1-194.

197. The method of Claim 196, wherein the bacterial infection is due to a Gram-negative bacteria.

198. The method of Claim 196, wherein the bacterial infection is due to a Gram-positive bacteria.

199. The method of any one of Claims 196-198, wherein the bacterial infection is due to a bacteria selected from the group consisting of *Salmonella enterica* Typhimurium, *E. coli*, *Pseudomonas aeruginosa*, *Klebsiella pneumoniae*, methicillin-resistant *S. aureus*, methicillin-sensitive *S. aureus*, *E. faecium*, *A. baumannii*, *E. cloacae*, *S. epidermidis*, *K. aerogenes*, *S. flexneri*, *Y. pseudotuberculosis*, *N. gonorrhoeae*, and *S. pneumoniae*.

200. The method of any one of Claims 196-199, wherein the COE are not toxic to mammalian cells.

201. The method of any one of Claims 196-200, wherein the mammalian subject has developed drug resistance to an antibiotics selected from the group consisting of vancomycin, ceftobiprole, ceftaroline, clindamycin, dalbavancin, daptomycin, fusidic acid, linezolid, mupirocin (topical), oritavancin, tedizolid, telavancin, tigecycline, aminoglycosides, carbapenems, ceftazidime, cefepime, ceftobiprole, ceftolozane or tazobactam, fluoroquinolones, piperacillin or tazobactam, ticarcillin or clavulanic acid, linezolid, streptogramins, tigecycline, and daptomycin.

202. The method of any one of Claims 196-201, wherein the effective amount of the COE is 1-10 mg/kg/week, 10-30 mg/kg/week, 30-50 mg/kg/week, 50-100 mg/kg/week, 100-200 mg/kg/week, 200-300 mg/kg/week, 300-400 mg/kg/week, 400-500 mg/kg/week, 500-600 mg/kg/week, 600-700 mg/kg/week, 700-800 mg/kg/week, 800-900 mg/kg/week, 900-1000 mg/kg/week, 1000-1100 mg/kg/week, 1100-1200 mg/kg/week, 1200-1300 mg/kg/week, 1300-1400 mg/kg/week, 1400-1500 mg/kg/week, 1500-1600 mg/kg/week, 1600-1700 mg/kg/week, 1700-1800 mg/kg/week, 1800-1900 mg/kg/week or 1900-2000 mg/kg/week.