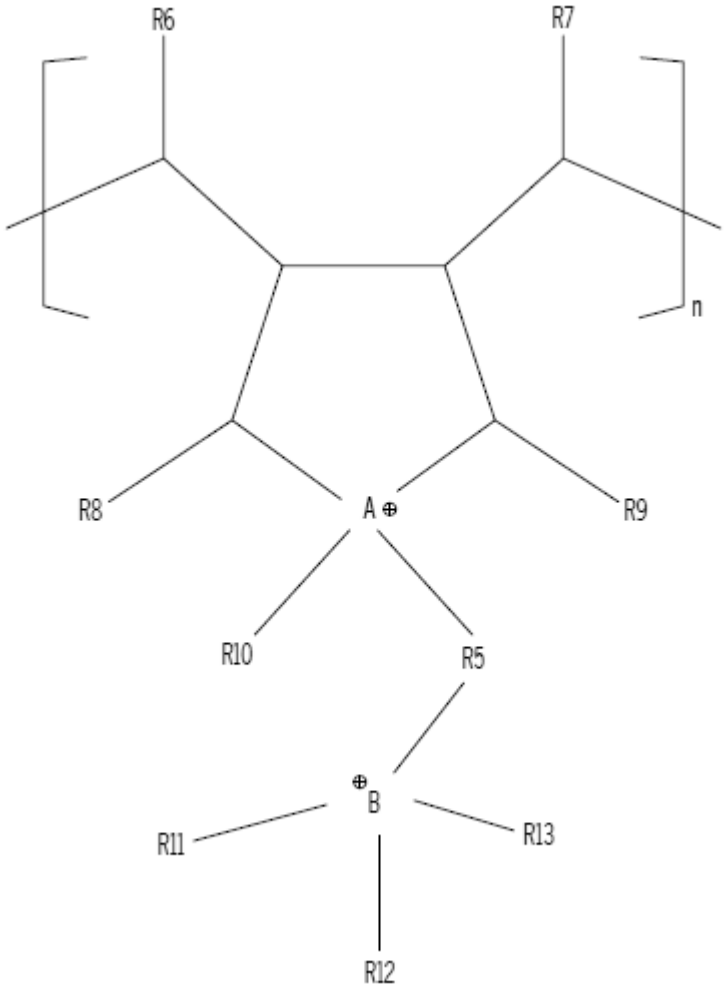
## CLAIMS

1. A cationic polymer comprising the structure:




where A is nitrogen or phosphorus and B is nitrogen or phosphorus;

where R5 is a branched or unbranched hydrocarbon chain having a carbon chain length of from 1 to 10,000 carbon atoms;

where each of R6, R7, R8, R9, R10, R11, R12, and R13 are hydrogen atoms or hydrocarbons, and where each of the hydrocarbons optionally comprises one or more heteroatoms; and

where n is from 10 to 10,000,000.

2. The cationic polymer of claim 1, where A and B are nitrogen.

3. The cationic polymer of claim 1, further comprising one or more anions selected from $Cl^-$, $Br^-$, $F^-$, $I^-$, $OH^-$, ½ $SO_4^{2-}$, 1/3 $PO_4^{3-}$, ½ $S^{2-}$, $AlO_2^-$.

4. The cationic polymer of claim 1, where R5 comprises a carbon chain length of from 3 to 30 carbon atoms, and preferably where R5 comprises a carbon chain length of from 5 to 10 carbon atoms.

5. The cationic polymer of claim 1, where R6, R7, R8, and R9 are hydrogen.

6. The cationic polymer of claim 1, where R10 is an alkyl group, preferably where R10 is a methyl group.

7. The cationic polymer of claim 1, where R11, R12 and R13 are alkyl groups, preferably where R11, R12 and R13 are methyl groups, or where R11, R12 and R13 are ethyl groups, or where R11, R12 and R13 are propyl groups.

8. The cationic polymer of claim 1, where the cationic polymer is poly($N^1$,$N^1$-diallyl-$N^1$-alkyl-$N^6$,$N^6$,$N^6$-trialkylalkane-1,6-diamonium halide).

9. The cationic polymer of claim 1, where the cationic polymer is poly($N^1$,$N^1$-diallyl-$N^1$-methyl-$N^6$,$N^6$,$N^6$-trimethylhexane-1,6-diamonium bromide).

10. The cationic polymer of claim 1, where the cationic polymer is poly($N^1$,$N^1$-diallyl-$N^1$-methyl-$N^6$,$N^6$,$N^6$-triethylhexane-1,6-diamonium bromide).

11. The cationic polymer of claim 1, where the cationic polymer is poly($N^1$,$N^1$-diallyl-$N^1$-methyl-$N^6$,$N^6$,$N^6$-tripropylhexane-1,6-diamonium bromide).

12. The cationic polymer of claim 1, where the cationic polymer is a non-surfactant.

13. The cationic polymer of claim 1, where the cationic polymer is utilized as a structure-directing agent to form a mesoporous zeolite.

14. A method for producing the cationic polymer, the method comprising:

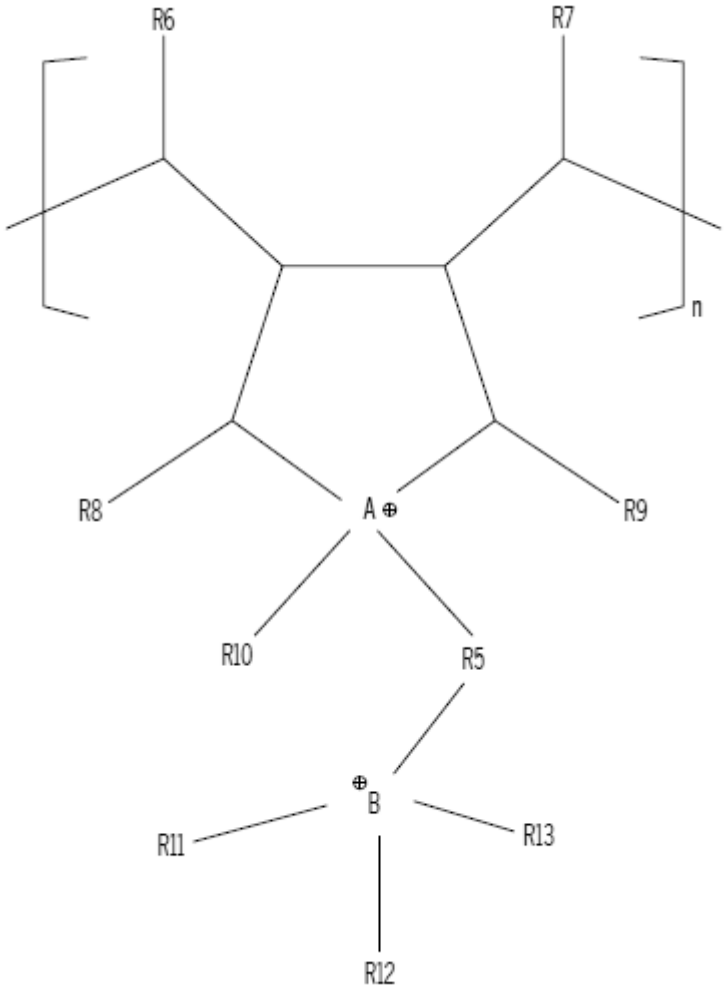
forming a diallyl methyl ammonium hydrochloride cation with a chloride anion from diallylamine;

polymerizing the diallyl methyl ammonium hydrochloride to form a poly(diallyl methyl ammonium hydrochloride) (PDMAH);

forming a poly(diallyl methyl amine) (PDMA) from the poly(diallyl methyl ammonium hydrochloride) (PDMAH);

forming an ammonium halide cation with a halide anion by reacting a trialkyl amine with a dihaloalkane; and

forming the cationic polymer of claim 1 by reacting PDMA with the ammonium halide cation ; preferably where the cationic polymer comprises the structure:




where A is nitrogen or phosphorus and B is nitrogen or phosphorus;

where R5 is a branched or unbranched hydrocarbon chain having a carbon chain length of from 1 to 10,000 carbon atoms;

where each of R6, R7, R8, R9, R10, R11, R12, and R13 are hydrogen atoms or hydrocarbons, and where each of the hydrocarbons optionally comprises one or more heteroatoms; and

where n is from 10 to 10,000,000.

15. The method of claim 14, wherein:

- the diallyl methyl ammonium hydrochloride cation with a chloride anion is formed by contacting the diallylamine with formic acid, formaldehyde, and HCl; or
- the diallyl methyl ammonium hydrochloride is polymerized by contact with 2,2'-axobis(2-methylpropionamidine) dihydrochloride (AAPH); or
- the poly(diallyl methyl amine) (PDMA) is formed by contacting the poly(diallyl methyl ammonium hydrochloride) (PDMAH) with methane and sodium methoxide.