Claims

1. A material comprising an anion-doped alkaline earth metal oxide, wherein the anion is Cl^-, SO_4^{2-}, PO_4^3 or any mixture thereof, and wherein the material further comprises water.

2. The material according to claim 1, wherein the alkaline earth metal is selected from the group consisting of Mg, Ca, Sr, Ba and any mixture thereof.

3. The material according to claim 1, wherein the material is in the form of nanofibers, flakes, rods, sheets or any mixture thereof.

4. A method for preparing the material of any one of claims 1 to 3, comprising the step of contacting a hydroxide salt of an alkaline earth metal with a second salt of the alkaline earth metal.

5. The method according to claim 4, wherein the second salt of the alkaline earth metal is not the same as the hydroxide salt of the alkaline earth metal.

6. The method according to claim 4 or 5, wherein the ratio between the hydroxide salt of the alkaline earth metal and the second salt of the alkaline earth metal is in the range of 99.9:0.1 to 80:20 by weight.

7. The method according to any one of clams 4 to 6, wherein the contacting step is performed in a solvent.

8. The method according to claim 7, wherein the solvent comprises acetic acid, water, or a mixture thereof.

9. The method according to any one of claims 4 to 8, wherein the contacting step further comprises a polymer.

10. The method according to claim 9, wherein the polymer is polyvinyl acetate or polyacrylonitrile.

11. The method according to claim 9 or 10, wherein the ratio between the hydroxide salt of the alkaline earth metal and the polymer is in the range of 1:5 to 1:20 by weight.

12. The method according to any one of claims 4 to 11, further comprising the step of forming the material into fibres.

13. The method according to claim 12, wherein the forming step is performed by electrospinning.

14. The method according to any one of claims 7 to 13, further comprising the step of removing the solvent.

15. The method according to any one of claims 4 to 14, further comprising the step of calcining the material.

16. The method according to any one of claims 4 to 15, further comprising the step of grinding the material into a powder.

17. The method according to any one of claims 4 to 16, further comprising the step of aging the material.

18. A method for adsorbing CO2 from an environment, the method comprising the step of contacting the material of any one of claims 1 to 3 with the environment.

19. Use of the material of any one of claims 1 to 3 to adsorb CO_2 from an environment.