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wherein the combination of the first and second solid materials controls the formation and release of the reactive gas.

4. A composition for use in containing and releasing a reactive gas comprising:

a reactive gas, reactive gas precursor, or combination thereof;

a fluid in which the reactive gas, reactive gas precursor, or combination thereof is dissolved; and

a solid material, which comprises a polycarbonate, in which the fluid is absorbed or adsorbed,

wherein the solid material controls the formation or release of the reactive gas.

5. A composition for use in containing and releasing chlorine dioxide gas comprising:

a liquid solution of a chlorate salt, a chlorite salt, chlorine dioxide, or a combination thereof;

first polymeric particles or fibers in which the liquid solution is absorbed or adsorbed; and

second polymeric particles or fibers, which comprise a polyacid, combined with the first polymeric particles or fibers,

wherein the combination of the first and second polymeric particles or fibers controls the formation and release of chlorine dioxide.

6. A composition for use in containing and releasing chlorine dioxide gas comprising:

a liquid solution of a chlorate salt, a chlorite salt, chlorine dioxide, or a combination thereof; and

polymeric particles or fibers, which comprise an acid polymer,

wherein the liquid solution is absorbed in the polymeric particles or fibers and the polymeric particles or fibers control the release of chlorine dioxide.

7. An apparatus for use in containing and releasing a reactive gas comprising:

a composition which comprises (i) a reactive gas, reactive gas precursor, or combination thereof, (ii) a fluid in

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which the reactive gas, reactive gas precursor, or combination thereof is dissolved, and (iii) a solid material in which fluid is absorbed or adsorbed, wherein the solid material controls the formation or release of the reactive gas;

a container having an enclosed cavity in which the composition is disposed; and

at least a pair of electrodes connected to a power source, the electrodes being positioned to pass an electric current or voltage through the composition.

8. A method of making a composition for the containment and release of a reactive gas comprising:

dissolving a first reactive gas precursor in a fluid to form a solution;

absorbing or adsorbing the solution in an absorbent solid material; and

exposing the solid material to a gaseous second reactive gas precursor to generate a reactive gas in the solid material, which is substantially non-reactive with the reactive gas, the fluid, or the reactive gas precursors.

9. The method of claim 8, wherein the gaseous second reactive gas precursor is an acidic, oxidizing, or reducing gas.

10. The method of claim 8, wherein the solid material is in the form of particles or fibers.

11. The method of claim 8, wherein the reactive gas is selected from the group consisting of chlorine dioxide, chlorine, bromine, iodine, carbon dioxide, oxygen, nitrogen, sulfur dioxide, hydrogen sulfide, hydrogen cyanide, chlorine monoxide, nitrogen monoxide, and nitrogen dioxide.

12. The composition of claim 5, wherein the second polymeric particles further comprise an absorbed or adsorbed liquid acid.

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