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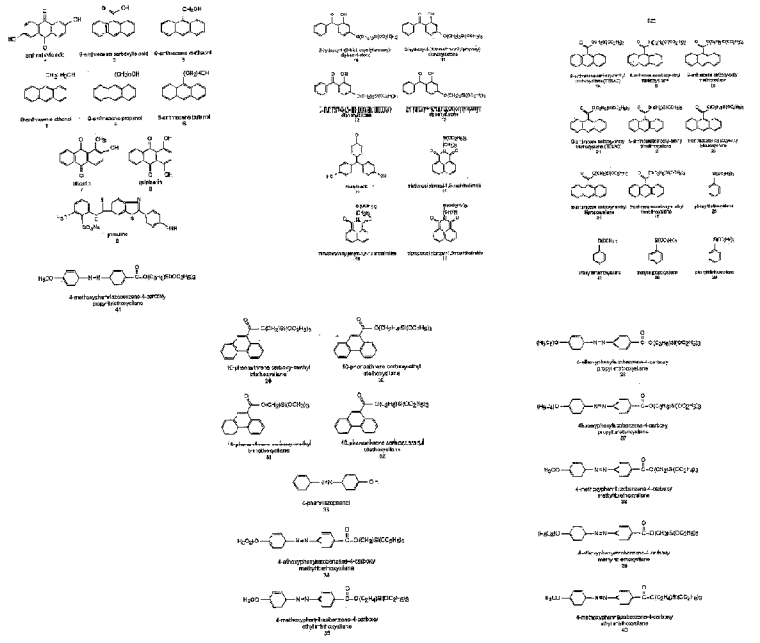

(57) Abstract: An absorbing composition is described herein that includes at least one inorganicbased compound, at least one absorbing compound, and at least one material modification agent. In addition, methods of making an absorbing composition are also described that includes: a) combining at least one inorganic-based compound, at least one absorbing compound, at least one material modification agent, an acid/water mixture, and one or more solvents to form a reaction mixture; and b) allowing the reaction mixture to form the absorbing composition at room temperature. Another method of making an absorbing composition includes: a) combining at least one inorganic-based compound, at least one absorbing compound, at least one material modification agent, an acid/water mixture, and one or more solvents to form a reaction mixture; and b) heating the reaction mixture to form the absorbing composition. Yet another method of making an absorbing composition is described that includes: a) combining at least one inorganic-based compound, at least one absorbing compound, at least one material modification agent, and one or more solvents to form a reaction mixture, wherein the at least one material modification agent comprises at least one acid and water; and b) heating the reaction mixture to form an absorbing material, a coating or a film. In other methods of making an absorbing composition described herein, those methods include: a) combining at least one inorganic-based compound, at least one absorbing compound, at least one material modification agent, and one or more solvents to form a reaction mixture, wherein the at least one material modification agent comprises at least one acid and water; and b) allowing the reaction mixture to form an absorbing material, a coating or a film.

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