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(54) **OPTIMIZING REACTIONS IN FUEL CELLS AND ELECTROCHEMICAL REACTIONS**

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(58) **Field of Classification Search** 204/155, 204/157.15; 429/10

See application file for complete search history.

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(57) **ABSTRACT**

This invention relates to novel methods for affecting, controlling and/or directing various reactions and/or reaction pathways or systems by exposing one or more components in a fuel cell reaction system to at least one spectral energy pattern. In a first aspect of the invention, at least one spectral energy pattern can be applied to a fuel cell reaction system. In a second aspect of the invention, at least one spectral energy conditioning pattern can be applied to a conditioning reaction system. The spectral energy conditioning pattern can, for example, be applied at a separate location from the reaction vessel (e.g., in a conditioning reaction vessel) or can be applied in (or to) the reaction vessel, but prior to other reaction system participants being introduced into the reaction vessel.

20 Claims, 72 Drawing Sheets

