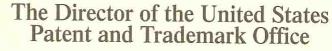
The United States of America



Has received an application for a patent for a new and useful invention. The title and description of the invention are enclosed. The requirements of law have been complied with, and it has been determined that a patent on the invention shall be granted under the law.

Therefore, this

United States Patent

Grants to the person(s) having title to this patent the right to exclude others from making, using, offering for sale, or selling the invention throughout the United States of America or importing the invention into the United States of America for the term set forth below, subject to the payment of maintenance fees as provided by law.

If this application was filed prior to June 8, 1995, the term of this patent is the longer of seventeen years from the date of grant of this patent or twenty years from the earliest effective U.S. filing date of the application, subject to any statutory extension.

If this application was filed on or after June 8, 1995, the term of this patent is twenty years from the U.S. filing date, subject to any statutory extension. If the application contains a specific reference to an earlier filed application or applications under 35 U.S.C. 120, 121 or 365(c), the term of the patent is twenty years from the date on which the earliest application was filed, subject to any statutory extensions.

In W. Judas

Director of the United States Patent and Trademark Office



(12) United States Patent **Pappas**

(54) METHOD AND MEANS OF MULTI-ACTIVATION OF IONS AND ATOMS WITH NMR AND EPR

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(*) Notice:

Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

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600/410-422

See application file for complete search history.

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(57)ABSTRACT

The invention uses one inductor, which is formed of one, two or a few twisted or parallel conductors, and exposes a sample object in a pulsed and damped alternating magnetic field (B) without necessarily the employment of a second, constant intensity, magnetic field. In this way, the nuclei and/or the electrons of the sample object are activated, in the presence of a non-constant magnetic field (B), that gets infinite negative and positive values between successive damped positive and negative values, crossing through the zero value during a magnetic pulse. Thus, a wide nuclear NMR and electronic EPR multiple-resonance of the sample object is achieved.

14 Claims, 8 Drawing Sheets

