

Biological Nano-Circulation By Radical Induced Dual Polarization

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We observe at the mercury working electrode, that under voltage control, biopolymers in solution doped with peroxide and divalent cations manifest a reversal of the impedance plot (Fig. 1,2)(1,2). The reverse DNA plot is sodium ion dependent. The prothrombin plot will reverse both with and without sodium ion (Fig. 2). These smooth curves plot conventionally before they reverse into the upper left quadrant of the complex plane. By extreme reversal in the horizontal axis (Z'), the plots achieve negative DC resistance, a subject of some complexity, but involving discharge (3).

Negative DC resistance has been described to be an organized charge state as in a diode semi-conductor (4,5). In our example, the peroxide diradicals (Fig. 3) are instrumentally (impedance) or biologically (EKG) pulsed to spin align (6). This induced alignment is easily illustrated with application of an external magnetic field to enrich lattice density : DNA peroxide tetrahedral arrays follow magnetic field lines (7). This argues for a magnetic Hall effect underlying the negative resistance. Polymers showing the reverse impedance plot also show microscopic liquid crystal arrays, supporting the view that there is an underlying coherent lattice structure (Fig. 4).

Reverse impedance and lattice structure have been observed for DNA, RNA, collagen, and prothrombin. This implies widespread intra and intercellular semi-conduction is possible in the higher living forms since they have metabolic production of the necessary dopant peroxide.

The presence of polarized water surrounding biological polymers, with a pulsed paramagnetic layer near the electric double layer, introduces the magnetic Hall effect as a unifying rapid signal system for Biology. In addition, the dependence on oxygen utilization to produce peroxide, limits this structure and signal system to normal aerobic forms, and excludes anaerobes such as malignant cell lines (8). Thus it is possible that defects in the dual

polarized hydration film, are disease defects in a diffuse and necessary electronic nano-circulation.

Fig.1 – DNA Reverse Impedance

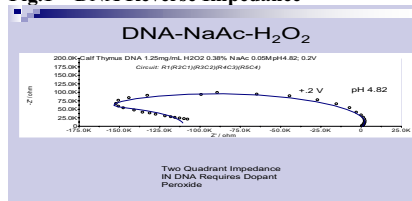


Fig.2 – Prothrombin Reverse Impedance

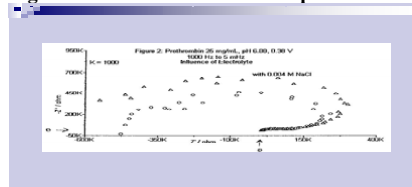


Fig.3 – Peroxide Biplanar Diradical

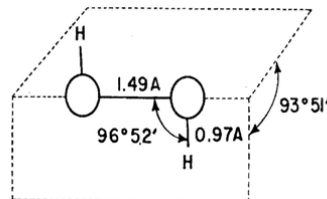
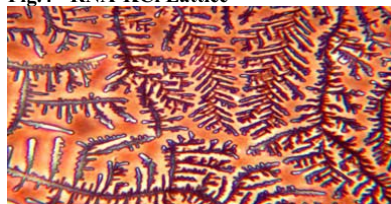


Fig.4 - RNA-KCl Lattice



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