The study of ψ* but of also ψ is possible during electro crystallization

P.B.Rotti
Retired Principal, MIG 3, 1st Main Road, 2nd Stage, Basaveshwarnagar, Bengaluru-560079
EMail: jagadishrotti@yahoo.co.in

Abstract:

An electro deposition of the cation on the surface single crystal substrate emulates the shape of the ψ^+ which is treated as complex conjugate of ψ. This ψ is treated as wave function of the electron, which is treated as imaginary quantity. The combined effect of ψ,ψ^+ in its dynamical volume (dj) is probed in the integration of $+\int \psi,\psi^+ dj = 1$, to know the mystery of an electron. The study is always the real one as the finding of the electron in the wave function ψ, if impossible is made possible by the combined effect of ψ, ψ^+ during electro crystallization. As naturally occurring crystals are perfect in shapes, so the principle of its formation is supposed to be perfect principle of the nature. Hence an attempt is made here in to look out for it in the process of electro crystallization. Accordingly it happens to be "**dynamical vacuum**" Principle

Keywords : Phase, Process, Schrodingers cat, fluctuation of vacuum

Introduction and discussion:

Tafel's parameters help the study the electro crystallization. The surface diffusion of the cation explains the crystallization at lower current density experiments And the charge transfer of the cation principle goes as the suitable parameters to explain deposition at higher current density experiments [1-5]. Such study helped to review other mathematical expressions which are emphatical in nature to study the processes[6-10]. The metallic phase study of D.Schetch man,the study of crystal growth by J.O.M Bockris and M.Enyo and also from Robert .L. Fullman and R Schneider etal, tried to bring out the possible new concepts [11-15]. The dynamical Vacuum concept developed here in is one of the such attempts **to simplify the study of nature.**

The deposition of the mass on the surface of the substrate cathode is indistinguishable in any part of the micro photographs (fig 4.1 - 4.12) of electro deposits. Hence the role of the mass of the either of the ions draws very little attention and gives a chance to vast possible and powerful role for the ELECTRON [15-17] to explain the processes. Now consider one of the cognisable, experimental parameters such as size in two or three dimensions for the evaluation of 'dj' present in

the expression $+" \psi,\psi^+ dj = 1 = +" d\{ \psi,\psi^+ dj\}$..... (1)

Which is an integral volume of the expression.

Let (r + dr) and (r – dr) units of length express the basic sizes of the reactants and products of the electrodic paths of the anode and cathode which are across the equilibrium size of 'r' unit to begin with. So the reduction and oxidation processes change the volumes to $(r + dr)^3$ and $(r - dr)^3$ respectively.So $(r^3+3r^2dr + 3 rdr+ dr^3)$ of unit volume of the reduction process remains in equilibrium with $((r^3-3r^2dr + 3 rdr^2- dr^3))$ unit volume of the oxidation process. Thus equating the above two expressions one is left with $(3r^2dr + dr^3) = (-3r^2dr – dr^3)$ As dr is very small compared to r(dr <<r) so dr^3 is neglected to proceed further. Then one has

$r^2dr = - r^2dr$ .....(2)

OR

$dj = -dj$ .....(3)

Thus the oxidation process decreases its dynamic volume($-r^2dr$) and the reduction process bulges to the same extent of the decreased quantity (dj) which is equivalent to the Gaussian surface of the charged particles. According to Lechatelir's principle the system finds the direction of the reaction from reduction to oxidation side as the Gaussian surface process is positive and that of oxidation surface is negative. It indicates the completion of the reduction process at the cost of oxidation process . This is equivalent to the participation of the electrons made available from that of oxidation to its reduction process. This picture of the reduction and oxidation process taking place in the electrolytic bath container is made more clear by considering it to occur in the quantum mechanical box which is called as PARTICLE IN THE BOX of the study of the QUANTUM MECHANICS. As the box is surrounded by the non penetrable walls of high energy of electrodes with finite volume of r^3 in its fold of equilibrium alone! no more or no less of it. But to account for the chemical reaction process one must push out the ($-3r^2dr$) volume equivalent to the volume of ELECTRONS and invite the same quantity of electrons ($3r^2dr$) to volume of QUANTUM BOX. The flow of ELECTRONS is less probable to the flow of vacuum of the container of QUANTUM BOX [Grahams law of diffusion] So the diffusion of the vacuum is faster than the diffusion of electrons. Hence the flow of VACUUM equivalent to the same volume of electrons takes place per unit time (dj/dt) which is equivalent to dq/dt = 'i' (current).

The translation of the generated cation from the oxidation process of the anodic surface through the electrolytic bath faces all possibilities of reactions of an anion and the solvent molecules with its bare surface before getting attracted by the negatively charged cathode. Hence the TRANSLATIONS OF the CATION $ø^+$, reach the desired surface of the substrate 'ø', to annul its charge. The remission of negative ion and the solvated sheath of the solvent of the cation to the bath container **resembles, the fluctuation process of the chemical reaction of the UNIVERSE in the vast vacuum container of it (UNIVERSE).** This process brings chemical change without ENTROPY CHANGE like the condensed matter of the solids of BOSE Eisenstein.

i.e., $+"ø^+ ø\ dj = +"d(ø^+ ø\ dj)$ .....(4)

This is as good as moulding of the $ø^+$ in the ø container of invisible electrolysis pot of volume dj of an isochoric strength .These three, ø, $ø^+$, and dj are the minimum energy factors to bring out the complete reaction so as to annul the effect of inflicted energy (of the current density).

The equation (4) takes the mathematical form as $1 = +"x^3$ when $ø^+ = ø = dj$

The flow of the free vacuum on the denser surface of the conductor present beyond the surface of the quantum box behaves as though it is that electron of an annular ring of Maxwells (soloniod) domain. Thus the surface , effects the flow of current and brings the chemical effect. **This is also as good as caging of Schrodinger's cats in the QUANTUM BOX at the expense of expulsion process of the Schrodingers tamed cats!** through the black hole of chemical reaction.

Heisenberg's uncertainty principle finds as the certainty principle to trace out an electron

in the neighbourhood of QUANTUM BOX to complete the electrolysis. $[(dx)(dp)(h^{-1})=1]$ .....(5)

The impinged current density of the external source pushes the weight of reactants as the inverse force into the dynamical form of 1st law of electrolysis suitable to the nano (ATOMIC) scale as $1 = l(f\ of\ (z)l * c * t)$ .....(6.0)

And the valance concept of an atom results into conjugate of equation 6.0 as $1= lf\ of\ (w)l^{-1} * c * t)$ .....(6.0)

W (force) α c (current) * t(time of flow) .....(6)

So on rearranging the conventional terms of the 1st law one gets

1= (1/valance) * Current * time .....(6.1) Only on treating the valence concept termed as force (f) with respect to 'z' as the unit value of 'f' or of the multiples of (f)

= (force $^{-1}$) * current * time ....6.12 [Cathodic reaction]

-1 = (force)$^{-1}$ * current * time 6.123 [Anodic reaction]

At an isochoric state of equilibrium, (force)$^{-1}$ = (current) = (time)

Let x be an isochoric the strength of each of the above terms. Then the resultant equation of (6.12) and 6.123 in terms of x one gets $\pm 1 = x^6$ .....(6.1234)

Let 1 be represented by 'y' in equation (6.1234)to go for general mathematical form as

$y = x^6$ ..... (6.1234)

So one gets six distinct charactered derivatives of the (6.1234) equation, there by indicating six distinct geometrical deposits such as point , lines layered shaped (hkl) plane , trigonal (triangular) , pyramid or square shaped , pyramid and hexagonal pyramidal shapes. But pentagonal shaped pyramid is not observed in the following micro photograph deposits



Fig.4.1. Electrogrowth of copper on copper (100) plane from acid copper sulphate bath at 2 mA/cm² (500X).



Fig 4.2. Electrogrowth of copper on copper (100) plane from acid copper sulphate bath at 5 mA/cm² (500X).

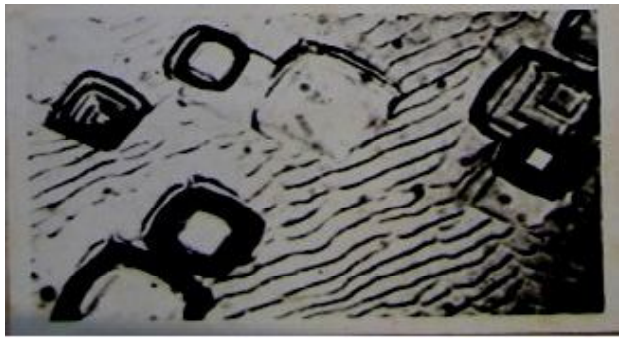


Fig 4.3. Electrogrowth of copper on copper (100) plane from acid copper sulphate bath at 10 mA/cm²(500X).

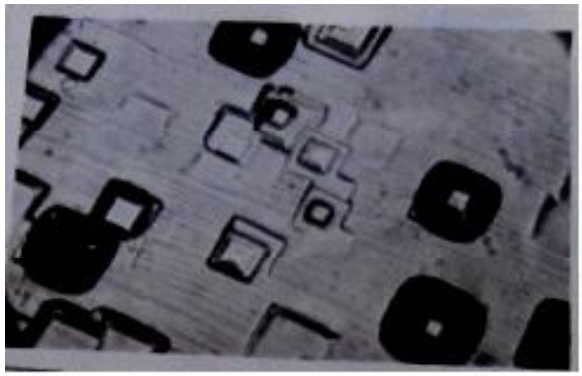


Fig 4.4. Electrogrowth of copper on copper (100) plane from acid copper sulphate bath at 15 mA/cm² (500X).

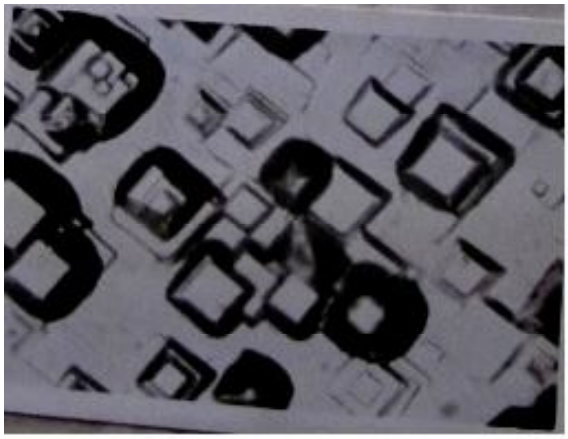


Fig 4.5. Electrogrowth of copper on copper (100) plane from acid copper sulphate bath at 20 mA/cm² (500X).

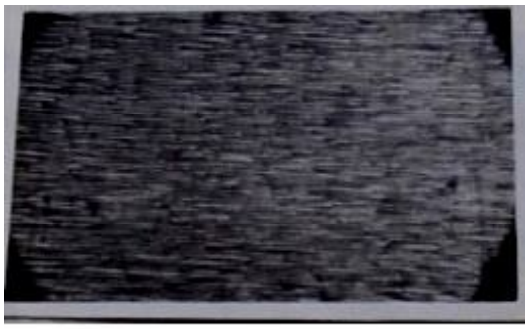


Fig 4.6. Electrogrowth of copper on copper (110) plane from acid copper sulphate bath at 2 mA/cm^2 (500X).



Fig 4.7. Electrogrowth of copper on copper (110) plane from acid copper sulphate bath at 10 mA/cm^2 (500X).

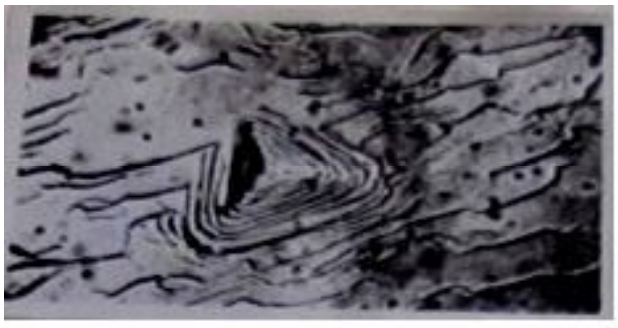


Fig 4.8. Electrogrowth of copper on copper (111) plane from acid copper sulphate bath at 2 mA/cm^2 (500X).

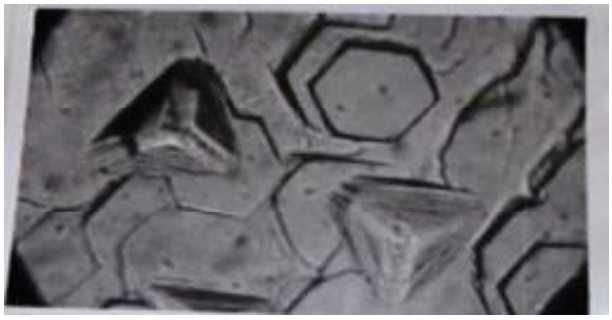


Fig 4.9. Electrogrowth of copper on copper (111) plane from acid copper sulphate bath at 5 mA/cm^2 (500X).

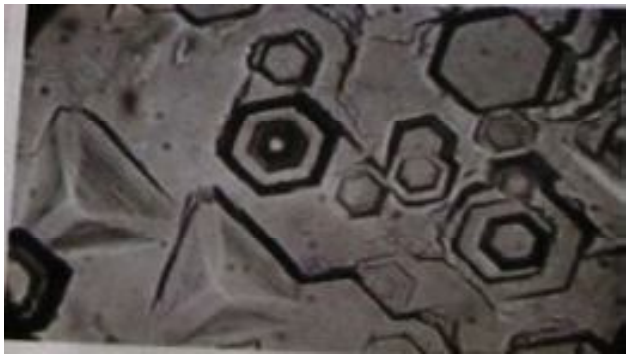


Fig 4.12. Electrogrowth of copper on copper (111) plane from acid copper sulphate bath at 10 mA/cm^2 (500X).

of copper in the range of 1mA to 20mA/cm^2 current density experiments on single crystal planes of copper. The symmetry of the above shaped crystal go as axis symmetry in the short range of orientation of the crystal study. D.Schechman studied crystals in the long range orientation state and found tenfold crystal axis which is equivalents two times the pentaxial (pentagonal) shaped crystal of the equation 6.1234. So one of the mathematical products of the squared equation 6.1234 certainly yields this tenfold crystal axis.

The equation 6.1234 is the zest of the electro crystallization, It specifies the positions , the shape and the time of duration of all the chemical reactions occurring with an isochoric strengths, along with the space and the orientation of the symmetry; carried out between the two specified and quantized

supportive part of ($-r^2dr$, x^2dr) cyclic path around the equilibrium. Multiple (Repetitive) numbers of cyclic path revolving around 1st or 2nd or nth quadrant of the equilibrium position expects many number of geometrical shaped crystal image(s). It represents the conjoined concentric conical shaped pyramids which undergo polymerisation to form the number of crystals on account the revolving reactions of Stephen Hawking lines passing through the middle or central part of crystals of the system and its surrounding universe

The expression $-r^2dr = r^2dr$ holds good from solution side to the solid surface of the substrate. This means the formation of crystal begins to occur while passing through the cyclic path of the electro crystallization [17] around the circumference of the substrate. This avoids the ambiguity of the availability of surface of the substrate for the oppositely natured process of the electron. Such dual natured electron of the process is the moving vacuum alone which is equivalent to an periodical increment of the system from its surroundings.

Let the position of the moving material on the interphases of the substrate and solution be denoted by 'dy' (dependent variable) and the crystals to be formed (r^2dr) as independent variable of the process.

This can be expressed as $+ dy = + r^2dr$ .....(8)The differential form the Equation (8) Indicates clearly the position of newly formed crystals on the peripheral interfacial circumferences . Such is the [fig 1 of [12 & 13]] position of inter phases of the substrate and the bulk of the solution. The mathematical flow sheet of the process goes as

$+ Hnðr \rightarrow + nðr\, dr \rightarrow + (nðr^2)/2. \rightarrow (nðr^3/3)$ crystals of the conic nature On further polymerisation of $nðr^3$ results into different geometrical crystals.

The generic electrolytic path begins with solid reactant (cathode) and ends up with solid crystalline products across the inter phases of the equilibrium .The implicit and explicit reason for the growth of geometrical shape is due to vector property [18], either of the $[d(m)/dt]_G$ = force .....(9)

or of

$[d(lnm)/dt]_G$ = force ——————————(9.1)

Expression present in the equation 6 to 6.1234 of 1st law of electrolysis

Conclusion:

In the recent past [16-18] the failure of Schrodinger wave equation and the needs for its modification as reincarnation of Schrodinger's cat to continue in the field of science can be made less worried by considering the following thermo dynamical view of the 1st law of thermo dynamics suitable for the system form as $ðq = ðE + dW$ .....(10)

As ðq(inflicting energy) is finite(dq) hence ðw = dw and **ðq=** dw

Therefore $dq/dW = 1 + dE/dW$ .....(11)

Therefore $+ dq = + (1+dE/dw)\, dw$ .....(12)

$= (1 + dE/dw)^2/2$ .....(13)

So the inflicted electrical energy (dq) dissipates completely into the system during electro crystallization.

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