

tuation spectroscopy, electron microscopy and measurement the internal volume, with cobalamin in association with calculation of DOPA molecules per vesicle. The vesicles a stable for at least three weeks. Osmotic swelling studies were conducted on the vesicles. The studies showed that osmotic pressure of 1.35×10^6 dynes/cm² resulted in a 1.6 increase in the diameter of the vesicles. Such swollen vesicles were stable for at least three weeks. Using the approach a Young's modulus of 10^7 dynes/cm² was found for these vesicles.

*Supported by a grant from the National Foundation Cancer Research.

10:24

- DT 8 Subtransitions in Liposomes, of Carbon Chain Length 10 through 21. LEONARD FINEGOLD^a AND MICHAEL A. SINGER^b, ^aPhysics, Drexel University, Philadelphia, PA 19104 and ^bMedicine, Queen's University, Kingston, Ontario, K7L4N6. * — Liposomes of diacyl phosphatidylcholines ("Cn PC", with n carbons per chain) with n=10 through n=22 were studied by differential scanning calorimetry after storage at 273 - 279 K for up to 208 days. For n=10 through n=14, liposome formation was verified by freeze-fracture electron microscopy. Whereas the temperatures of main and pre-transitions show a steady dependence on n, the subtransition temperatures are relatively n-independent. Hence subtransition formation is probably head-group related. Below about n=13, hysteretic transitions may occur at temperatures above the pre- or main transitions, as in the corresponding ethanolamines.

*Supported by M.R.C.; L.F. was a Queen's Quest Scholar.

10:36

- DT 9 Coherent Imaging of the Onset of Contraction in Skeletal Muscle. M. SHARNOFF and L.P. BREHM, Univ. Delaware--We construct holographic differential images of contraction's onset in single fibers of frog muscle. Such images suppress inactive portions of the fibers and make conspicuous slight changes in structure or mechanical condition. The experiments were performed isometrically in bright field illumination at 18° C and achieved a time resolution of 0.5 msec. We find: 1) in the 0.5 msec interval immediately preceding the onset of active tension, the fibers are imaged nearly invisibly; 2) at the onset of tension, a few well-separated regions of myofibrillar diameter and of length ≈ 100 μ m appear against a dark background; 3) during the next 0.5 msec these regions are joined by other similar ones, and their mean transverse spacing is significantly reduced; 4) these regions appear to occupy less than 1/4 the fiber cross section.

These results are very different from what might be expected if individual myofibrillar sarcomeres were activated at random.

10:48

- ADT 10 Analysis of Electron-Distributions in Molecular Systems by Coulomb-Corrected SCCEH Procedure.* J.N. ROY, K.C. MISHRA, SANTOSH K. MISHRA and T.P. DAS, SUNY ALBANY. The influence of the coulomb potential from charges on neighboring atoms on the potential experienced by the electrons in the Self-Consistent Charge Extended Hückel Procedure has been studied for a number of small molecules, CH, FeCl₂, and pyrrole. The charges on the atoms

by the CCSCCEH procedure were found to be in satisfactory agreement with those from self-consistent Field Hartree-Fock calculations, providing confidence for the use of CCSCCEH procedure in large biological molecules. Results for the hyperfine properties in hemin by this procedure will be presented and compared with earlier theoretical work and experiment.

*Supported by NIH Grant HL15196

11:00

- DT 11 Effect of Friction on Electron Transfer in Bio-molecules. Anupam GARG, U. of Illinois; José ONUCHIC, Caltech; Vinay AMBEGAOKAR, Cornell U.*--We report on a solution of a simple but fully quantum mechanical model for electron transfer in bio-molecules incorporating friction arising from nuclear degrees of freedom. Path integral methods are used: (1) to solve the problem in both adiabatic and non-adiabatic limits; (2) to obtain a Fokker-Planck equation that opens the way to a detailed study of the transition between these two regimes with changing friction.

*supported respectively by the MacArthur Foundation; the Brazilian agency CNPq, the University of Sao Paulo, and the NSF; the NSF and the ONR.

11:12

- DT 12 Mental Activity and Physical Events. D. M. SNYDER.--A test of the possible influence of mental activity on physical events can be tested by a variation of the Aspect et al. experiment with the following stipulation: People are used to freely determine the events measured. Any difference in results between such an experiment and one using machines to randomly determine the events measured would indicate the influence of mental activity on the measurements of the physical events. If such an influence were demonstrated, mental activity is Einstein's free human intellect (from which the concepts and fundamental principles of a theoretical system of physics are invented) with the following condition: Sense experience does not provide an independent means of verifying the truth of theoretical propositions. Einstein wrote that the eternal mystery of the world is its comprehensibility. If mental activity were demonstrated to influence the measurement of physical events, this mystery would be on the path to being resolved.

1A. Aspect, J. Dalibard, and G Roger. Phys. Rev. Lett., 49, 1804 (1982).

11:24

- DT 13 Penetration Postponement versus Ananda, Dasara Nagamani, Physicist. Vagabond potential, V, is calculated using the computational mesh. The computational mesh is figured out by plotting kama and matsarya in a two dimensional mesh. Nonpenetration is anandical; civilization is symmetry. Tolerating someone experiencing ananda is prostitutional tendency. Ananda develops. A negativism is induced and a positivism, simultaneously, comes to oppose it; a mate rushes toward the positivism to suppress negativism and experience ananda. Nonqualified physics is made disqualified physics by turning it over to vagebonds, thereby witchcrafting it. Nonqualified physics is unpatented physics. Nonpatented ability is primitive, unprotected, and penetration resistant.

SESSION DU: FORD PRIZE SYMPOSIUM

Tuesday morning, 26 March 1985; Constellation A, Hyatt Regency at 9:00; E. Passaglia, presiding

9:00

DU 1 Craze Nucleation in Glassy Polymers. R. P. KAMBOUR, General Electric Research and Development.

Craze initiation in isotropic glassy polymers depends on the stress field, stress magnitude, time and temperature. Recently the stresses σ_{yy} and P for initiation have been found to cor-

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