World Academy of Science, Engineering and Technology
International Journal of Electronics and Communication Engineering
Vol:15, No:12, 2021

Engineering Topology of Photonic Systems for Sustainable Molecular Structure: Autopoiesis Systems

Authors : Moustafa Osman Mohammed

Abstract : This paper introduces topological order in descried social systems starting with the original concept of autopoiesis by biologists and scientists, including the modification of general systems based on socialized medicine. Topological order is important in describing the physical systems for exploiting optical systems and improving photonic devices. The stats of topological order have some interesting properties of topological degeneracy and fractional statistics that reveal the entanglement origin of topological order, etc. Topological ideas in photonics form exciting developments in solid-state materials, that being; insulating in the bulk, conducting electricity on their surface without dissipation or back-scattering, even in the presence of large impurities. A specific type of autopoiesis system is interrelated to the main categories amongst existing groups of the ecological phenomena interaction social and medical sciences. The hypothesis, nevertheless, has a nonlinear interaction with its natural environment 'interactional cycle' for exchange photon energy with molecules without changes in topology. The engineering topology of a biosensor is based on the excitation boundary of surface electromagnetic waves in photonic band gap multilayer films. The device operation is similar to surface Plasmonic biosensors in which a photonic band gap film replaces metal film as the medium when surface electromagnetic waves are excited. The use of photonic band gap film offers sharper surface wave resonance leading to the potential of greatly enhanced sensitivity. So, the properties of the photonic band gap material are engineered to operate a sensor at any wavelength and conduct a surface wave resonance that ranges up to 470 nm. The wavelength is not generally accessible with surface Plasmon sensing. Lastly, the photonic band gap films have robust mechanical functions that offer new substrates for surface chemistry to understand the molecular design structure and create sensing chips surface with different concentrations of DNA sequences in the solution to observe and track the surface mode resonance under the influences of processes that take place in the spectroscopic environment. These processes led to the development of several advanced analytical technologies: which are; automated, real-time, reliable, reproducible, and cost-effective. This results in faster and more accurate monitoring and detection of biomolecules on refractive index sensing, antibody-antigen reactions with a DNA or protein binding. Ultimately, the controversial aspect of molecular frictional properties is adjusted to each other in order to form unique spatial structure and dynamics of biological molecules for providing the environment mutual contribution in investigation of changes due to the pathogenic archival architecture of cell clusters.

Keywords : autopoiesis, photonics systems, quantum topology, molecular structure, biosensing
Conference Title : ICOPE 2021 : International Conference on Optics, Photonics and Energy
Conference Location : Cairo, Egypt
Conference Dates : December 13-14, 2021