

Title: Optical Sorting of biological organisms and cellular structures using Mie Scattering Analysis

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In optical physics, light scattering is one of the most popular research topic for last few years. By solving the light scattering problems along with related computational problems, it has become possible to characterize new particles. Specially, in the field of biomedical science, the cellular organisms and finding out the abnormalities in cellular structure are now possible by using the light scattering mechanism. Scattered light spectrum can provide critical information of the spatial configuration or morphology. Mie scattering analysis, where electromagnetic wave concept is employed and Maxwell's equations are used for the derivation of the incident, scattered and internal fields, is being used for this characteristic study. Without applying any chemical testing process, just using Mie analysis, optical sorting of nanoscale organisms can be done. Even. more specifically, with the perfect method validation process, it is also possible to distinguish different viruses based on size factor and efficiencies. The cancerous cells have anomalities in their structural components which also can be identified by this Mie analysis. It has been found that the healthy nucleus gives the highest scattering intensity while Leukemic cells which are a type of cancer cells of blood , show decreased intensity of scattered light. The amount of scattered light intensity changes is found different for different types of cancer cells. It is expected that this process can open a new door to categorize many unknown viruses and to find out the aberration of biological cell structures .

Biography

Tamanna Motahar has completed her M. Eng. from University of Alberta, Canada and M. Sc. From North South University, Bangladesh. She is a Lecturer of ECE department, North South University. She graduated summa cum laude in B.Sc. in Computer Engineering from American International University- Bangladesh (AIUB). Her interdisciplinary research works are in Biomedical Engineering, Optical Electromagnetics and Human Computer Interaction (HCI) . She is conducting Junior Design course of Undergraduate CSE students and mentoring several student groups for their projects. She is the founder faculty advisor of NSU ACM_W Student Chapter, which is the country's first and only ACM chapter for female students.

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Session name/ number:
Category: Oral Presentation