Report on Webinar of COMSOL Multiphysics

Objective- To get acquainted with the simulation capabilities of COMSOL Multiphysics simulation software in the emerging areas of science and engineering.

Details- The webinar entitled "Introduction to COMSOL Multiphysics and its Related Applications in Engineering and Sciences" was successfully conducted on 18/09/2017 from 4:00 P.M.-5:30 P.M. in S-101. In total 51 people attended the session out of which 9 were professors from various departments and rest were the B.Tech, M.Tech and Ph.D. students from all the disciplines.

The speaker of the session was Mr. Ravi Ranjan representing the COMSOL Multiphysics Pvt. Ltd. The webinar started with a basic introduction about COMSOL Multiphysics and its multidisciplinary applications. This included a detailed description about the procedure to define a scientific/engineering problem in the simulation domain, the basic flow that has to be followed while defining a problem and illustration of various features involved in it. For this purpose a problem of structural mechanics was taken up and an in-depth illustration was presented starting from setting up of simulation domain to finally conclude with the explanation of simulation results.

Further, some introduction pertaining to the utility and flexibility of COMSOL to handle various types of interdisciplinary problems was briefly discussed. Additionally, the recently included advanced features like "Application Builder" etc. were also discussed for sufficient length of time. Moreover, the suitability of COMSOL for teaching and research was discussed in detail. In the last phase of the session, queries of the attendees were taken up by the speaker and his technical assistance team. Some major queries raised by faculties and students were:

1. How to include a new material in the simulation domain if it is not present in the library of COMSOL?
2. Can one simulate the load flow analysis of power systems?
3. Is COMSOL useful for simulating the power electronic devices and machines?
4. What is the utility of COMSOL to simulate microstrip patch antenna?
5. Which module(s) is required to simulate Solar Cells in COMSOL?

6. Can one simulate the macromolecular interactions, image processing and body movement analysis in COMSOL?

Most of the queries were well explained by the speaker and his team and rest will be communicated respectively to the attendees upon detailed elaboration of the problem.

Achievements- The session was immensely helpful to faculties and students of the institute and will motivate them to pursue research in the emerging areas of science and technology. Specifically, the information about the importance of numerical simulations in enhancing the understanding of engineering systems and to innovate for achieving novel solutions to the existing problems in these systems were known. The discussion elucidated the fact that COMSOL would be useful to scientists/engineers from all the disciplines of the institute and will be a useful addition to the upcoming facilities of the institute as it seemed to be beneficial for both teaching and research requirements of the institute.