

From The Laboratory To The Living Room: COMSOL As A Remote Teaching And Research Tool

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Abstract

At University College London, Applied Analytical Chemistry MSc course, we have used COMSOL Multiphysics as an alternative to laboratory-based student research projects. Use of computational modelling enabled students to complete their research work remotely while gaining experience in the field of multiphysics modelling.

Students were encouraged to translate lab based experimental work into the computational domain. This approach was aimed at providing students the skills necessary to formulate viable research questions and to understand the complexities of the physical systems they were studying. Here, a summary of COMSOL use in chemistry education at UCL will be presented alongside results from student work that range from optimisation of photoacoustic spectroscopy cells to atmospheric pressure plasma diagnostics.

Figures used in the abstract

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Figure 1 : Comparison of experimental light emission and molar fraction of He metastable in column of atmospheric pressure plasma.

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Figure 2 : Acoustic pressure of the 1st harmonic mode and the corresponding standing wave in a photoacoustic cell.

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Figure 3 : Voltammogram of electroactive probe in a thin soap film.