Special Edition Invitation

Special Issue on the Chemometrics-assisted Spectroscopic Methods of Analysis

Most of spectroscopic methods of analysis are considered to be non-destructive, fast and sensitive methods. Recently, their application has been extended to pharmaceutical, biological, environmental and food analysis. There are different types of spectroscopic techniques, for example: IR, NMR, UV-Vis spectrophotometry, fluorescence, atomic absorption and emission. UV-Vis spectrophotometry and fluorescence are examples of spectroscopic techniques that suffer from interference due to presence of overlapped broad spectra in multi-component analysis. On the other hand, atomic spectroscopy which yields narrow lines is subject to other types of chemical and spectral interferences. These types of interferences could be eliminated by treatment of data using various chemometric methods. Moreover, the number of chemometric applications to other spectroscopic techniques as IR and NMR, is rapidly increasing due to the great interest in using these techniques in quantitative analysis. Chemometric methods in spectroscopic analysis are mathematical or statistical methods used to handle the spectroscopic data. They are either used to mathematically treat the spectroscopic data to minimize the response of interferences and maximize the response of the analyte or used to enhance regression to correctly quantify the samples. Moreover, they can be used for classification purposes to group samples according to their spectra. Different chemometric methods are applied to the spectroscopic data in quantitative analysis in different matrices (pharmaceutical, biological or environmental) as: derivative, derivative ratio, discrete Fourier convolution, wavelet transform, principal component regression, partial least squares, classical least square (CLS), artificial neural network and many other methods. In this issue we present the recent advances for the different chemometric methods used to handle spectroscopic data of analysis in different matrices as: pharmaceutical, biological, environmental … etc.

Best regards,

Marwa A.A. Ragab

Assistant Professor of Pharmaceutical Analytical Chemistry- Faculty of pharmacy- University of Alexandria.