**Complex evaluation of Raman spectra using morphological filters: algorithms, software implementation and experimental verification of background subtraction, cosmic ray removal and peak recognition in SERS spectra of designer drugs**

Vít Pavelka

Abstract:

We discuss the use of morphological operations, such as dilation, erosion,  
opening as well as a compound operator P-function to provide baseline  
correction, cosmic ray removal and peak recognition in Raman spectra. The  
algorithms are implemented as Python scripts, permitting automated evaluation  
or individual Raman spectra as well as Raman maps or time-resolved series which  
is demonstrated by processed SERS spectra of designer drugs, such as mephedrone  
and buphedrone.