ABOUT IMPORTANCE OF POSITIVITY CONSTRAINT FOR SOURCE SEPARATION IN FLUORESCENCE SPECTROSCOPY (TueAmPO3)

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Abstract :

The importance of positivity constraint in source separation techniques for spectroscopic applications is presented in this paper. Microspectrofluorometry measures fluorescence signals emitted by the analyzed tissues. The information associated to each pure chemical species must be estimated in order to characterize these tissues. Source separation techniques are well suited to this task. However, pure species spectra and concentrations non−negativity must be considered to obtain a realistic solution. Applications of fluorescence spectroscopy on wheat and barley grains are analyzed. Each one has specific properties suggesting the use of two conceptually different algorithms: Non−negative Matrix Factorization (NMF) and Second Order Blind Identification followed by a positive procedure ("positive SOBI"). We show that no complementary experiments are needed to identify chemical species of the analyzed tissues.

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