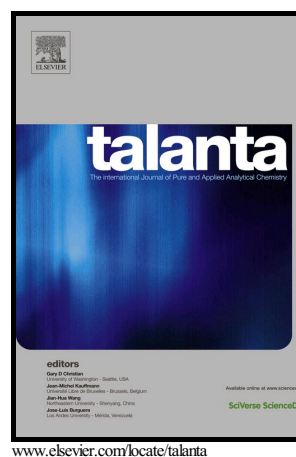


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Local rank-based spatial information for improvement of remote sensing hyperspectral imaging resolution

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Abstract:

This paper shows the effect of using local rank and selectivity constraints based on spatial information of spectroscopic images to increase the performance of Multivariate Curve Resolution (MCR) methods and to decrease the ambiguity of final results. Fixed Size Image Window-Evolving Factor Analysis (FSIW-EFA) is applied to discover which pixels are more suitable for the application of local rank constraints. An automated method to help in setting appropriate threshold values for the application of FSIW-EFA, based on global and local use of Singular Value Decomposition (SVD) is proposed. Additional use of correlation coefficients between selected reference spectra and pixel spectra of the image is shown to provide an alternative way for the application of the selectivity constraint in spectroscopic images for the first time. This alternative method resulted to be satisfactory when pure pixels exist.

Keywords: MCR, local rank constraints, rotation ambiguity, hyperspectral imaging, remote sensing

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