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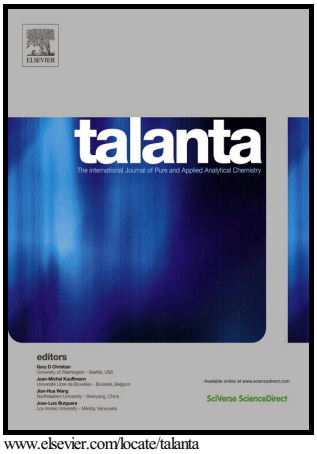

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Monitoring of tablet coating processes with colored coatings

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Abstract:

Endpoints of coating processes for colored tablets were determined using in-line Raman spectroscopy. Coatings were performed with six commercially available formulations of pink, yellow, red, beige, green and blue color. The coatings were comprising pigments and/or dyes, some causing fluorescence and interfering the Raman signal. Using non-contact optics, a Raman probe was used as process analytical technology (PAT) tool, and acquired spectra were correlated to the sprayed mass of aqueous coating suspension. Process endpoints were determined using univariate (UV) data analysis and three multivariate analysis methods, namely Projection to Latent Structures (PLS)-regression, Science-Based Calibration (SBC) and Multivariate Curve Resolution (MCR). The methods were compared regarding model performance parameters. The endpoints of all coating experiments could be predicted until a total coating time of 50 minutes corresponding to coating thicknesses between 21 and 38 µm, depending on the density of the coat formulation. With the exception of SBC, all calibration methods resulted in R^2 values higher than 0.9. Additionally, the methods were evaluated regarding their capability for in-line process monitoring. For each color, at least two methods were feasible to do this. Overall, PLS-regression led to best model performance parameters.

Graphical abstract