437f Pattern Recognition for Characterization of Pharmaceutical Powders

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A large part of pharmaceutical manufacturing involves the use of particulate materials and it is well known that both particle size and particle shape affect the physical characteristics of tablets. For example, this could lead to different compaction characteristics of powders that form tablets, to the delivery characteristics of drugs and to flowability characteristics during process.

Image processing and analysis algorithm based on the invariant image moment technique was used in this work to calculate the particle shape by comparing the features extracted from templates with the features extracted from each of the objects in the image.

The vision system capability studies to determine particle size of spheres indicated high precision with a repeatability of 0.0012 in and 0.5 % relative standard deviation. The accuracy was within 0.1 to 0.9 % of the average value considered as true value. The pattern recognition of microcrystalline cellulose (MCC) indicated that particles of equant and acicular shape as defined by USP are predominant. Analysis of all results confirms that image processing and analysis would be a suitable tool for pharmaceutical process analytical technologies (PAT).