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**Development of an image-analysis light-scattering technique** SAAD ALGARNI, HEKTOR KASHURI, GERMANO IANNACCHIONE, Physics Deparment, Worcester Polytechnic Institute, Worcester, MA — We describe the progress in developing a versatile image-analysis approach for a light-scattering experiment. Recent advances in image analysis algorithms, computational power, and CCD image capture has allowed for the complete digital recording of the scattering of coherent laser light by a wide variety of samples. This digital record can then yield both static and dynamic information about the scattering events. Our approach is described using a very simple and in-expensive experimental arrangement for liquid samples. Calibration experiments were performed on aqueous suspensions of latex spheres having 0.5 and 1.0 micrometer diameter for three concentrations of 2 X $10^{-6}$, 1 X $10^{-6}$, and 5 X $10^{-7}$ % w/w at room temperature. The resulting data span a wave-vector range of q = $10^2$ to $10^5$ $cm^{-1}$ and time averages over 0.05 to 1200 sec. The static analysis yield particle sizes in good agreement with expectations and a simple dynamic analysis yields an estimate of the characteristic time scale of the particle dynamics. Further developments in image corrections (laser stability, vibration, curvature, etc.) as well as time auto-correlation analysis will also be discussed.

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