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Population Dynamics of the Stationary Phase Utilizing the ARGOS Method S. ALGARNI, Worcester Polytech Inst, A.J. CHAREST, Wentworth Inst Techn, G.S. IANNACCHIONE, Worcester Polytech Inst — The Area Recorded Generalized Optical Scattering (ARGOS) approach to light scattering employs large image capture array allowing for a well-defined geometry in which images may be manipulated to extract structure with intensity at a specific scattering wave vector ($I(q)$) and dynamics with intensity at a specific scattering wave vector over time ($I(q,t)$). The ARGOS method provides morphological dynamics noninvasively over a long time period and allows for a variety of aqueous conditions. This is important because traditional growth models do not provide for conditions similar to the natural environment. The present study found that the population dynamics of bacteria do not follow a traditional growth model and that the ARGOS method allowed for the observation of bacterial changes in terms of individual particles and population dynamics in real time. The observations of relative total intensity suggest that there is no stationary phase and that the bacterial population demonstrates sinusoidal type patterns consistently subsequent to the log phase growth. These observation were compared to shape changes by modeling fractal dimension and size changes by modeling effective radius.

Germano Iannacchione
Worcester Polytech Inst

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