

**RADIATION CHARACTERISTICS OF FILAMENTOUS CYANOBACTERIA  
*ANABAENA CYLINDRICA***

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**ABSTRACT.** This study presents the spectral radiation characteristics and optical properties of filamentous cyanobacteria *Anabaena cylindrica* from 400 to 750 nm. A polar nephelometer was used to measure the scattering phase function of the cyanobacteria suspension at 633 nm. The spectral average mass scattering and absorption cross-sections were measured in the photosynthetically active radiative (PAR) region at three different biomass concentrations after 12 days of growth. The absorption cross-sections featured peaks corresponding to chlorophyll *a* (Chl *a*) at 435 and 676 nm and phycocyanin (PCCN) at 630 nm. The real and imaginary parts of the complex index of refraction of *A.cylindrica* were retrieved via an inverse method by treating them as infinitely long and randomly oriented cylinders with a volume-equivalent diameter distribution. The results can be used in conjunction with the radiative transport analysis to predict and optimize light transfer in photobioreactors so as to maximize microalgae growth.