

Abstract

Harvesting only 4% of light striking the Earth could possibly fulfill present energy demands of a mankind. Chlorosome of green sulfur bacteria is regarded as suitable light-harvesting system for photosynthesis imitation. This work presents comparison of absorption and hole burning spectra of artificially prepared aggregates similar to chlorosomes with different compositions in order to verify the proposed role of quinones in excitation quenching and its redox dependence. Absorption spectra at room and helium temperature showed a resemblance between artificial aggregates and chlorosomes. Hole burning experiments verified the role of quinones in excitation quenching under aerobic conditions. Even more pronounced excitation quenching was observed under anaerobic conditions. Significant improvements of the original experimental set-up provided better experimental data which raised many further questions that are worth trying to answer in the future.