

Effect of Chain Length on Skeletonema Pseudocostatum as Probed by THz Spectroscopy

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Abstract : Microalgae, particularly diatoms, are well suited for monitoring environmental health, especially in assessing the quality of seas and rivers in terms of organic matter, nutrients, and heavy metal pollution. They respond rapidly to changes in habitat quality. In this study, we focused on *Skeletonema pseudocostatum*, a unicellular alga that forms chains depending on environmental conditions. Specifically, we explored whether metal toxicants could affect the growth of these algal chains, potentially serving as an ecotoxicological indicator of heavy metal pollution. We utilized THz spectroscopy in conjunction with standard optical microscopy to observe the formation of these chains and their response to toxicants. Despite the strong absorption of terahertz radiation in water, we demonstrate that changes in water absorption in the terahertz range due to water-diatom interaction can provide insights into diatom chain length.

Keywords : THz-TDS spectroscopy, diatoms, ecotoxicology, marine pollution

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