

Optical Properties of Algae

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INTRODUCTION

Around 25 percent of the biomass in the world is algae's. As organisms they have found ways to harvest energy from the sunlight while preventing harmful wavelengths in the sunlight to penetrate or at least harm the organism. We believe this clever mechanism is obtained through structuring the shell encapsulating the organism. We show predicted and measured reflectivities and transmission spectra from different species of algae's.

THEORY

The shells of algae's have a structure that is unique to each algae. Figure 1 show examples of shells from different species [1].

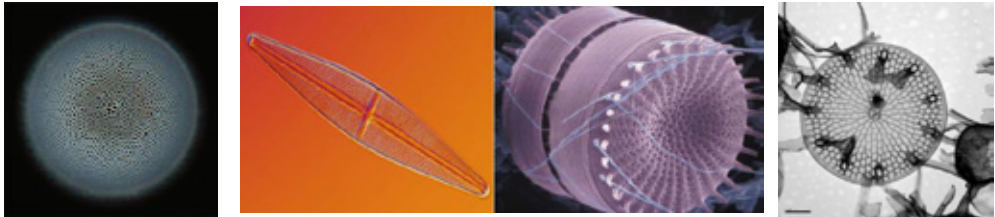


Figure 1: Examples of algae's. The algae to the left will be the one primarily used in the course

The functionality of the structure is not well understood but may be used to focus desired wavelengths onto the organism of specific algae. In recent experiments we have demonstrated that at least some shells of specific species generate multiple focus points of visible light [2]. This is confirmed by numerical simulations. The next step is to study how this functionality depend on wavelength, ad species of algae

DISCUSSION

We demonstrate transmission and reflection measurements performed on various species of algae. We show the formation of multi focus points and discuss the origin of these. The purpose of the shell structure will be discussed and future application of algae's highlighted

REFERENCES

- [1] <http://paleonerdish.wordpress.com/2013/06/10/an-introduction-to-diatoms/>
 [2] <http://plen.ku.dk/english/research/Glyco/evolution/alpha/>