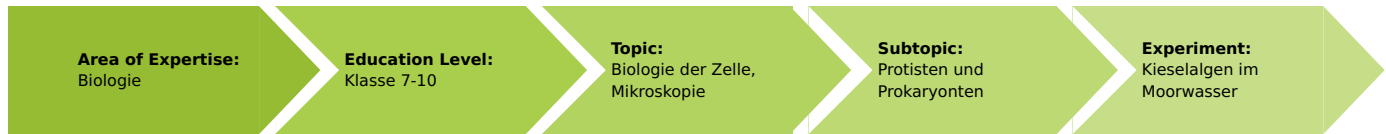


# Diatoms in moor water (Item No.: P1444701)

## Curricular Relevance



### Difficulty



Easy

### Preparation Time



10 Minutes

### Execution Time



30 Minutes

### Recommended Group Size



1 Student

### Additional Requirements:

- Water sample from a moor

### Experiment Variations:

### Keywords:

## Task and equipment

### Information for teachers

#### Information

Many people are afraid of the dangerous moor because one might sink and drown in it. For others, however, this is an interesting place. Archeologists find traces of early settlements in moors. Paleobotanists search for pollen which plants left behind in prehistory. Botanists find here particularly interesting carnivorous plants, and zoologists a highly diversified fauna. The acid water of a moor or bog also allows us a new perspective on a different world under the microscope!

#### Information on obtaining materials

If there is a bog near your home you can take a water sample from a small pond or squeeze out a piece of moss. As this will not be the case all too often, we must take these samples from "artificial bogs": Typical bog plants (e.g. common sundew, *Drosera*) are sold in pots at gardening shops. A small amount of substrate can be taken from breeding beds or pots when are kept very moist and, if necessary, slurried with rainwater. Then allow to settle. You will have sufficient study material in the liquid phase.

#### Information on diatoms (Diatomeae)

Diatoms attract immediate attention on account of their intensive refraction properties. Their shells do not consist of siliceous acid ( $\text{H}_2\text{SiO}_3$ ) but of anhydrous silicon dioxide  $\text{SiO}_2$ . Diatoms are composed of two shells of which one is inserted in the other like a box and a lid. They are not green but brown because chlorophyll is covered by another pigment (fucoxanthin).

Diatoms are very esthetical study objects as they display noticeable patterns of orifices, arches and protrusions. Conspicuous is also the constant rate of locomotion in diatoms. Such movements are possible due to plasma streaming and the existence of a contractile organelle. Many diatoms possess a cleft (raphne) which extends to the protoplasm of the cell.

#### Information on how to proceed

##### ad 1: [Exploratory microscopy](#)

The students will find innumerable objects of different kinds. Only few shall be mentioned here (larger objects first, smaller objects towards the end of the list):

- Decomposed moss leaflets and skeletal structures, part of the chitinous plates of insect larvae
- Rotifers (Rotatoria), Chaetonotus (Gastrotricha), nematodes
- Ciliates in all sizes
- Colonies of green algae (Chlorophyta) and coccal green algae (Chlorococcaceae)
- Diatoms (Diatomeae) in all sizes
- Desmids (Desmidiaceae) in great abundance

- Rhizopoda with and without shells; heliozoa, dinoflagellates
- Very small unicellular green algae (Chlorophyta) and stigma flagellates (Euglenophyta)

and many others.

ad 2: Diatoms in bog water

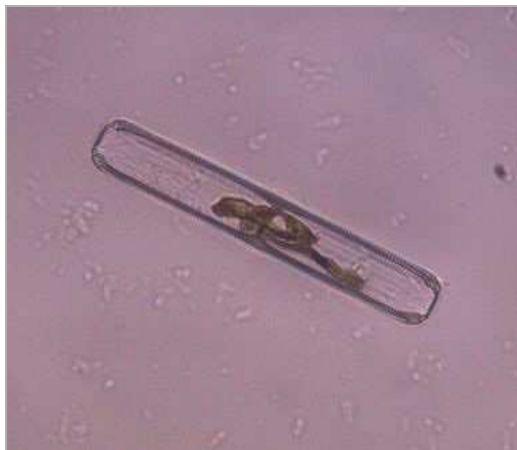
Diatoms are easy to draw since their structures are distinctly visible. The students' drawings should give a small impression of the diversity of the diatoms: approx. 10,000 species are supposed to exist!



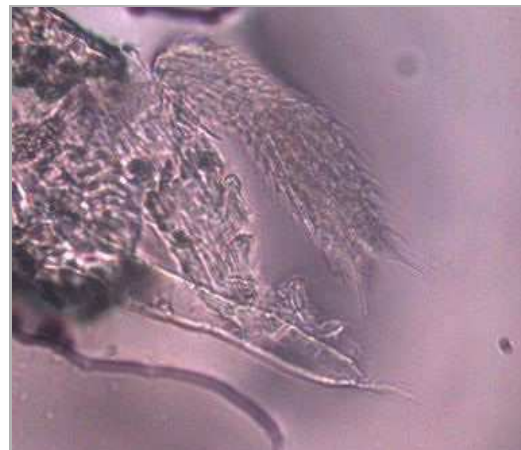
Scenedesmus (colony) and diatoms, (400x)



Desmid, (400x)



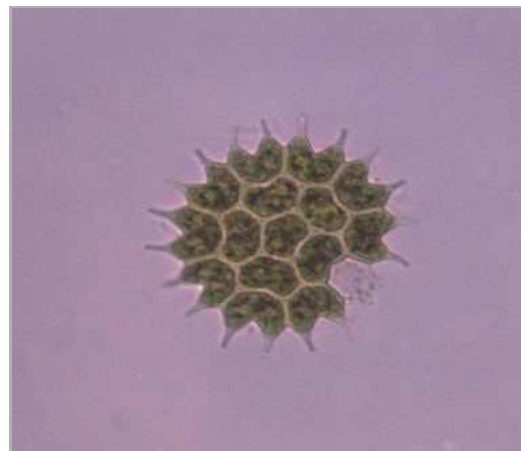
Diatom, (400x)



Chaetomonas, (400x)



Various diatoms, (400x)



Capsal green alga, (400x)



Diatom, (400x)



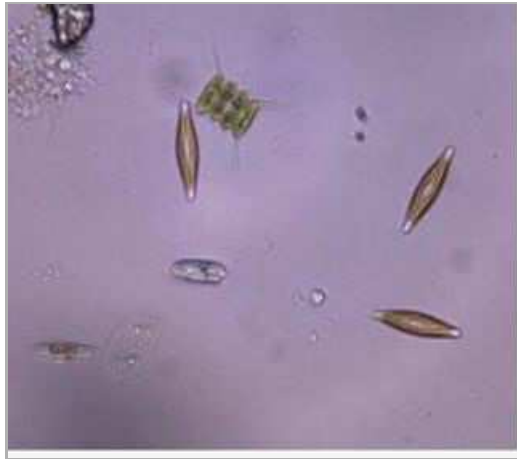
Unicellular green algae, (1000x)

# Diatoms in moor water (Item No.: P1444701)

## Task and equipment

### Task

Explore which organisms are particularly abundant in moor water!



### Equipment

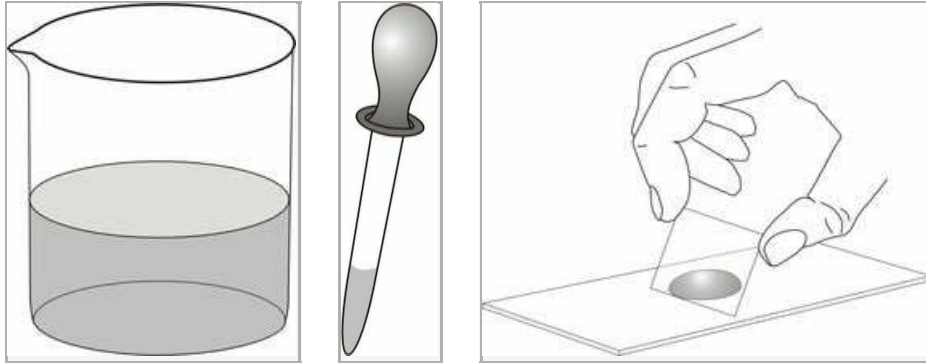
Position No.	Material	Order No.	Quantity
1	Euromex BioBlue BB.4250 microscope	EUR-BB-4250	1
2	Microscopic slides, 50 pcs	64691-00	1
3	Cover glasses 18x18 mm, 50 pcs.	64685-00	1
4	Beaker, low form, plastic, 100 ml	36011-01	1
5	Dropping pipette with bulb, 10pcs	47131-01	1

## Set-up and procedure

### 1. Exploratory microscopy

First of all, you should go to a moor on a microscopic expedition! Take a sample, scan it with lowest power first. Magnify interesting objects with higher power!

Observations: Describe three interesting objects in your sample in the report and make a drawing of them!



### 2. Diatoms in bog water

Surely you have discovered naviculate objects on your first explorations which differed distinctly from their surrounding. Like sand, they consist of silica dioxide which is also referred to as siliceous acid anhydride. For this reason, they are called siliceous algae (Diatoms). They are very hard and almost transparent.

Many different species occur in a bog-water sample. Register the diversity of the diatoms together with your classmates by comparing your drawings or even opening a diatom exhibition.

## Report: Diatoms in moor water

### Result - Observations

Describe three interesting objects in your sample!

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### Evaluation - Question 1

Sketch the first interesting object of your sample.

## Evaluation - Question 2

Sketch the second interesting object of your sample.

## Evaluation - Question 3

Sketch the third interesting object of your sample.