2. Hands-on experiments with hydrogels

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Hydrogels are superabsorbent polymers which are topic of ongoing researches of modern materials. They are used in agriculture, construction and horticulture industry as well as in medicine. Hydrogels are also interesting from the educational point of view since they present the novel smart materials with special properties. Especially hydrogels in spherical shape are very useful for school experiments. Students can study time dependence of the volume of hydrogels and observe the swelling under the USB microscope (Figure 1), play with their size and determine densities, explore that all transparent object cannot be seen in the transparent liquids, experience that materials can change the properties of light (Figure 2), measure and record the size of the image seen under the hydrogel sphere, study the influence of media’s properties on swelling, etc. All these experiments, showing hydrogels’ special properties and some physics concepts, will be presented during the workshop. You will experience that presented experiments can give ideas for more hands-on activities, so there will be also time to try some of them.

Figure 1. Hydrogel in spherical shape immersed in water and observed under the USB microscope.

Figure 2. Directing the green laser beam to the spherical hydrogel in coloured water.