

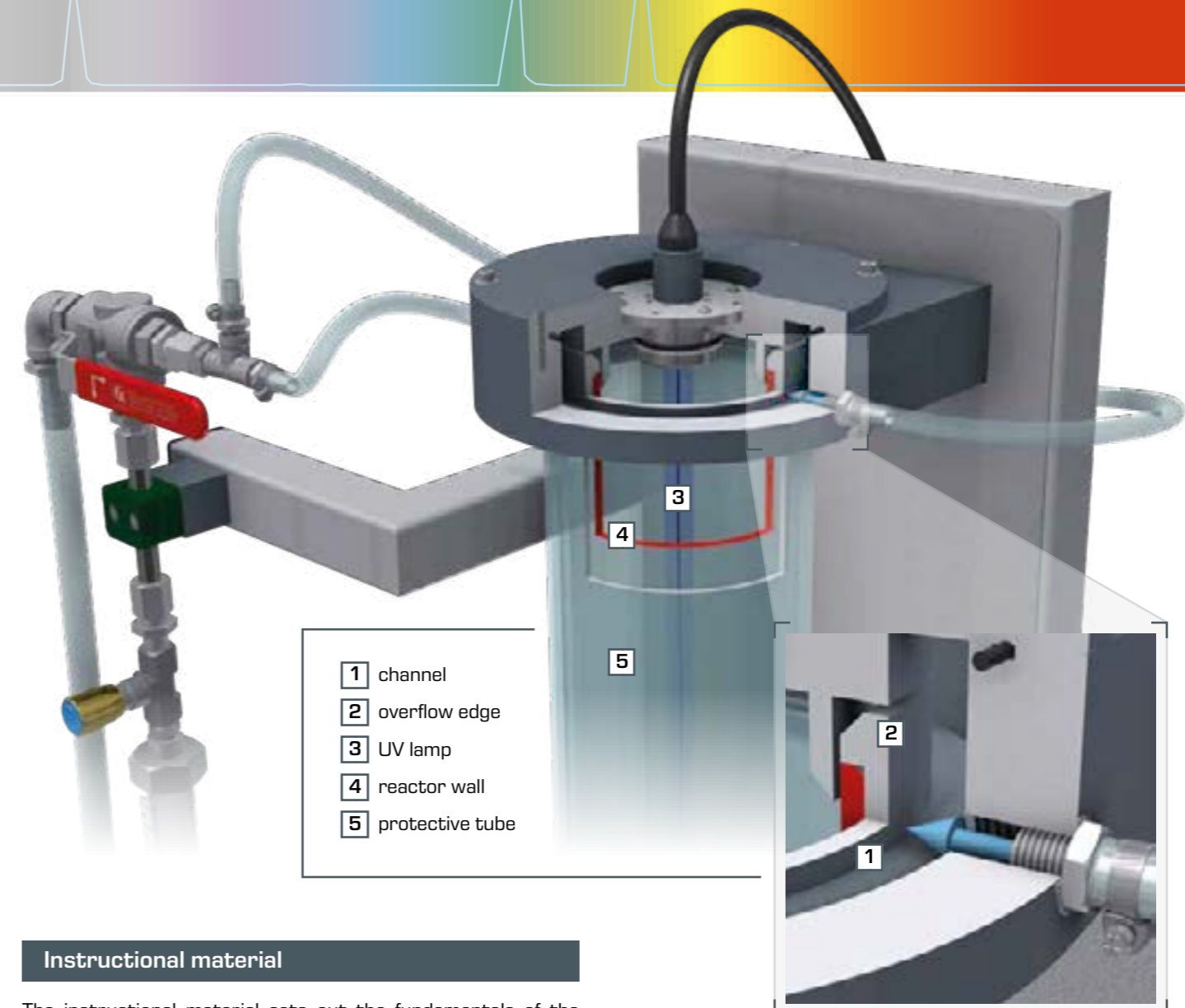
CE 584 Advanced oxidation – H₂O₂ and UV

Falling film reactor in batch mode

Advanced oxidation processes are state-of-the-art in water treatment. This device enables you to investigate the oxidation of non-biodegradable organic substances using hydrogen peroxide (H₂O₂) and UV radiation. The educational focus is on the experimental application of reaction kinetics relationships.

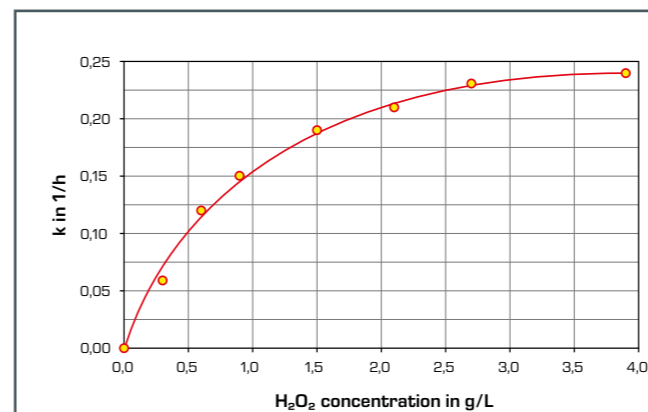
The main component of the device is a falling film reactor, which is operated discontinuously. The raw water mixed with hydrogen peroxide is pumped out of a tank into a channel at the upper end of the reactor. The water flows along the inner wall of the reactor, over an overflow edge, flows down as a thin film and finally ends up back in the tank.

At the centre of the reactor there is a UV lamp. Irradiation with UV light (254 nm) causes the hydrogen peroxide to be split into the desired OH radicals.



Instructional material

The instructional material sets out the fundamentals of the process and the reaction kinetics relationships in detail. In addition, an experiment is described in detail and evaluated as an example.



Excerpt from the CE 584 manual: rate constant k as a function of the amount of H₂O₂ used. Triethylene glycol dimethyl ether was used as the organic contaminant.

Learning objectives

- plotting concentration time curves
- investigation of reaction kinetics
 - ▶ order of reactions
 - ▶ reaction rate
- effect of amount of H₂O₂ on the reaction progress

About the product:

