

Unit for testing of the photocatalysts in gas phase

Description/Parameters:

The photocatalytic measurements are carried out in stainless steel batch photoreactors with different geometry ($V = 0.14 - 0.72 \text{ dm}^3$). Mercury or LEDs lamps can be used as a source of irradiation. Gaseous products are analyzed on a gas chromatograph (Shimadzu Tracera GC-2010 Plus) equipped with a barrier discharge ionization detector (BID). These gases are mainly H_2 , CO , CH_4 , and N_2O .

Usage/Services:

Testing the photocatalytic properties of materials that can be in powder form or applied on a support (ceramic foam, glass, etc.).

- Reactions: photocatalytic reduction of CO_2 , photocatalytic decomposition of N_2O .
- Amount of photocatalyst: 0.3 g photocatalyst in powder form.
- Photocatalytic tests can be carried out using radiation:
 - 8 W Hg UVC $\lambda_{\text{max}} = 254 \text{ nm}$,
 - 8 W Hg UVA $\lambda_{\text{max}} = 365 \text{ nm}$,
 - 6.8 W UVA LED $\lambda_{\text{max}} = 365 \text{ nm}$,
 - 3.4 or 4.8 W VIS LED $\lambda_{\text{max}} = 405 \text{ nm}$.
- Reaction temperature: 30 °C.
- Pressure in the reactor: max. 1400 kPa CO_2 or N_2O .

