Business Field:
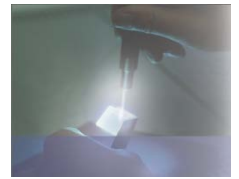
Tunnel & Emission

Sales Training

Application fields & products

» Tunnels:
  › Visibility
  › Fire / Smoke Detection
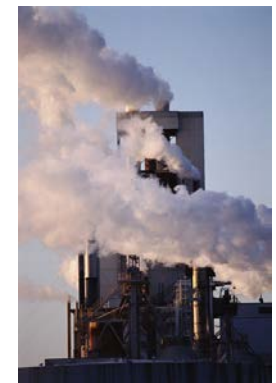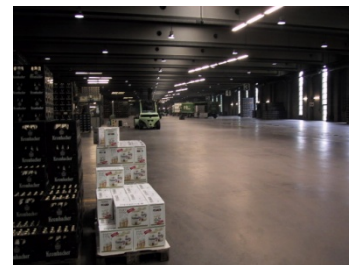
» Ship building
  › Oil Mist Detection

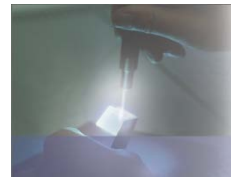» Environment
  › Air quality in working areas
  › Emission

SIGRIST
PROCESS-PHOTOMETER
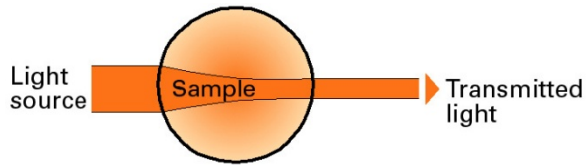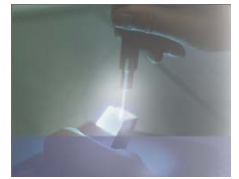
Tunnel - Visibility

» Purpose: guarantee the safety in the tunnel

› Optimal ventilation monitoring

› Reliable limit detection for possible closing of the tunnel

› Saving electricity by adjusting the ventilation according to the actual visibility conditions

SIGRIST
PROCESS-PHOTOMETER
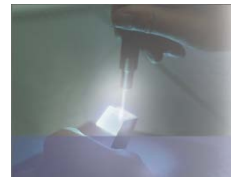
Tunnel - Visibility

» Visibility is measured in units expressing the extinction of light over a certain distance, E/m (extinction per meter) or, more convenient, mE/m (milli-extinction per meter)

» 1 mE/m means the light intensity is reduced by a factor of 10 over a distance of 1000 meters
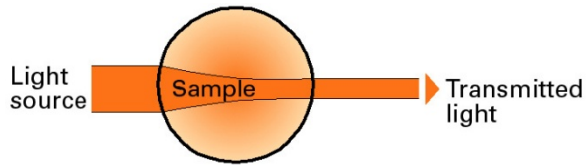
» 0.1 mE/m = ~ 40 Km visibility
1 mE/m = ~ 4 Km visibility
10 mE/m = ~ 400 m visibility
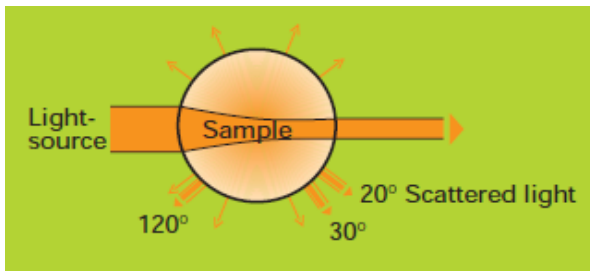15 mE/m = ~ 200 m visibility

Tunnel - Visibility

» **Measuring principles**
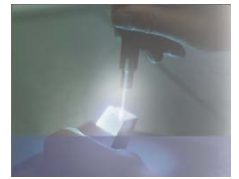

» Transmission measurement over a distance of 6 .. 20 m for direct monitoring of the light extinction

» Scattered light measurement of the dust concentration in the tunnel, which is mainly caused due to the light extinction (used by SIGRIST)

Tunnel - Visibility

» **Typically measured values**

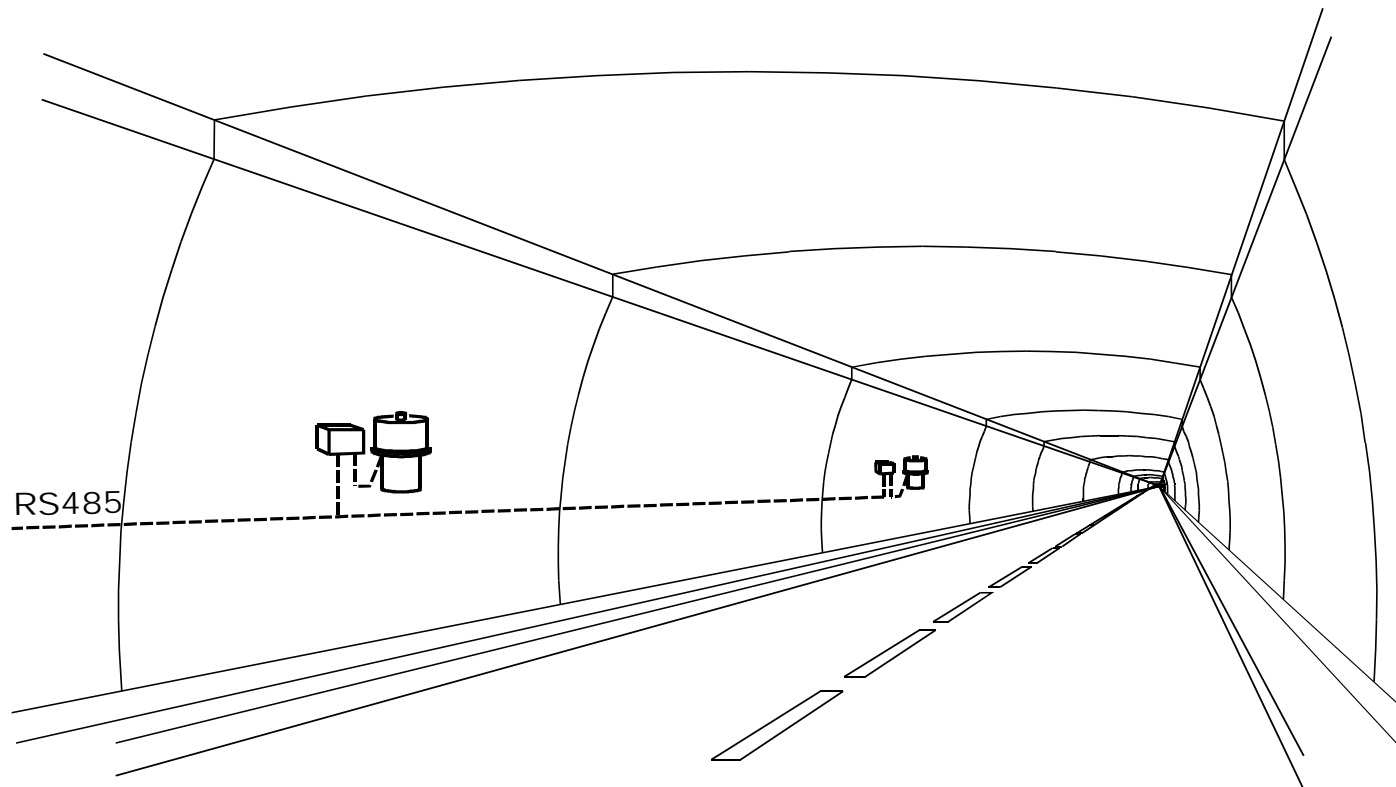|		
Normal Traffic:	<	5 mE/m
Heavy Traffic:	~	5 mE/m
Traffic Jam:	~	7 mE/m
Closing of the tunnel:		12 mE/m
Fire:	>	15 mE/m

SIGRIST
PROCESS-PHOTOMETER
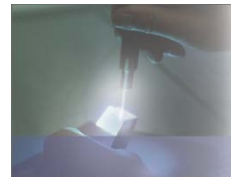
Tunnel - Visibility

» **In-situ installation**   Example with bus connection to central control room

RS485

SIGRIST
PROCESS-PHOTOMETER
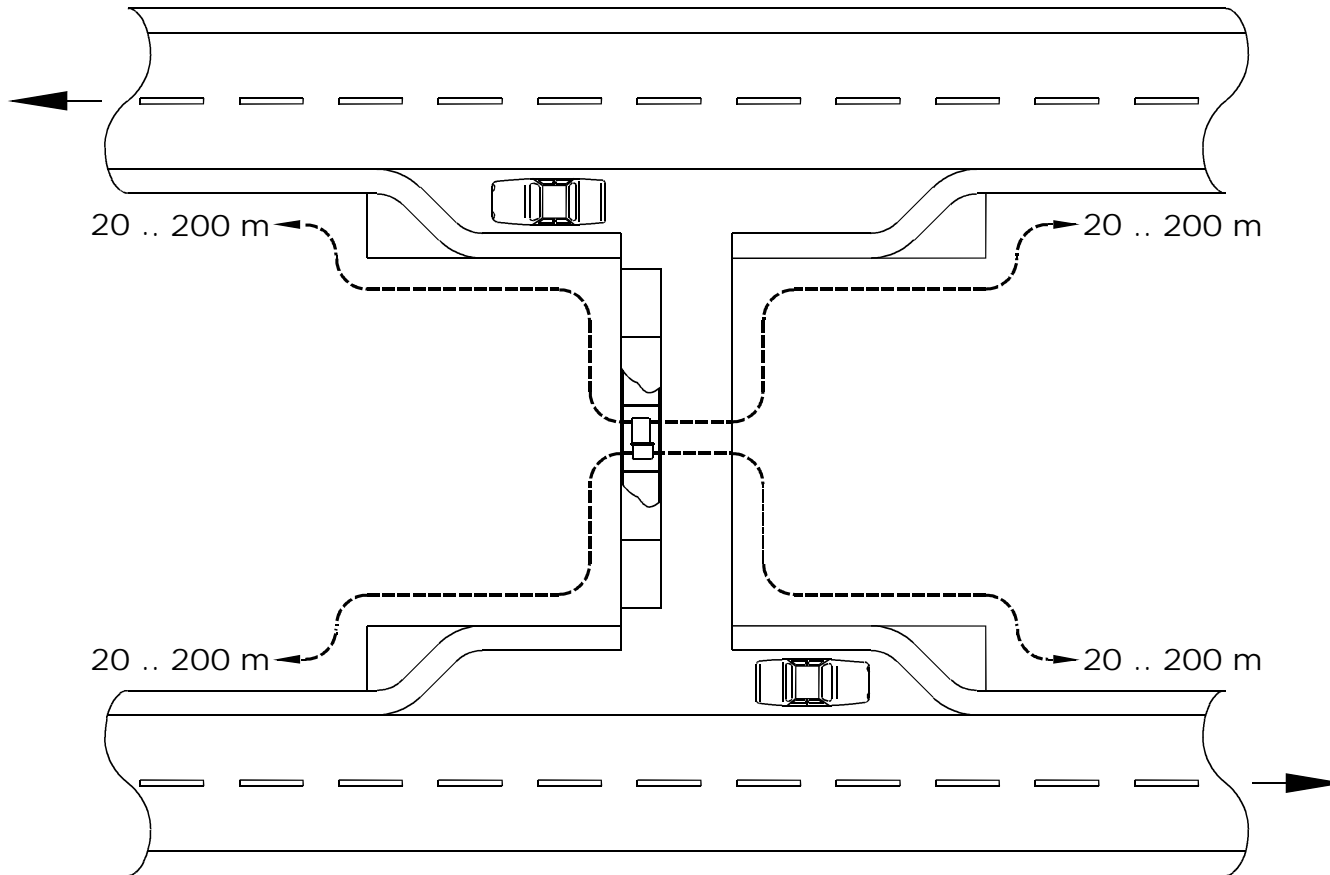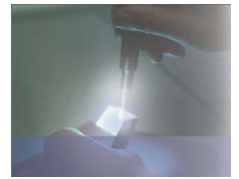
Tunnel - Visibility
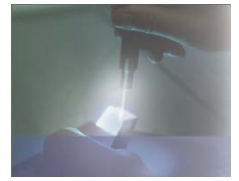
» **Extractive installation**   Example 20...200m with multiple sampling

VisGuard

» System configuration:

› In-situ

› Extractive

› Control unit „SIREL"

› Accessories
   » Heater
   » Profibus

SIGRIST
PROCESS-PHOTOMETER

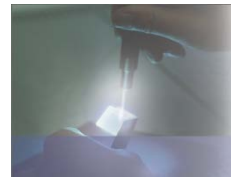# Tunnel – Fire / smoke detection

» Purpose: guarantee the safety in the tunnel

  › Early smoke detection

  › Allow safe evacuation in case of smoke/fire

  › Localization of the incident

  › Initiate the right flow pattern of the ventilation to limit the smoke distribution
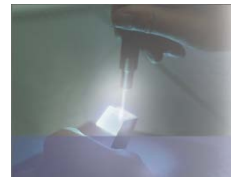
SIGRIST
PROCESS-PHOTOMETER

Tunnel – Fire detection

» Most fires (except in case of an explosion, e.g. after a crash) start with smouldering fires due to technical problems:

› Overheated engine, turbocharger

› Blocking brakes

› Tires, etc.

» Smouldering fires develop smoke and poisonous gases:

› People are killed because of the gases, not because of the fire!
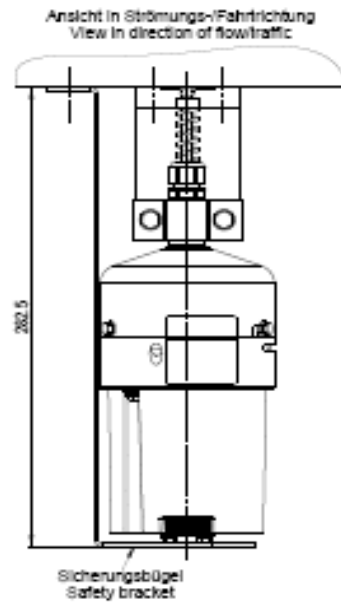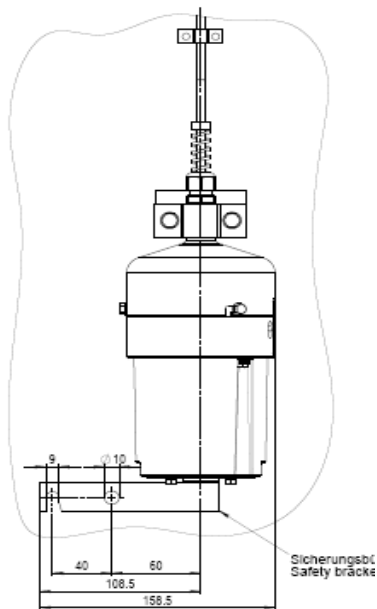
» Visibility quickly decreases

SIGRIST
PROCESS-PHOTOMETER

Tunnel – Fire detection

Installation: wall   ceiling   intermediate ceiling mounting

9   Ø 10

40   60

108.5

158.5

Sicherungsbü
Safety bracke

Ansicht in Strömungs-/Fahrtrichtung
View in direction of flow/traffic

262.5

Sicherungsbügel
Safety bracket

SIGRIST
PROCESS-PHOTOMETER
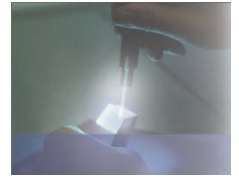
Tunnel – Fire detection

» System configuration:

- › FireGuard

- › Control unit
  - » SIPORT R
  - » SIPORT PB

- › Mounting bracket

- › Accessories
  - » Heater
  - » Cables

SIGRIST
PROCESS-PHOTOMETER

Ship building - Oil mist detection

» Purpose: guarantee the safety on the tanker

› Unmanned engine room as possible source of hazards:

› Leaks in the high-pressure fuel lines can produce an extremely fine diesel mist that is highly explosive

› Crankshaft overheating as a result of poor lubrication

› Sample collection system draws air continuously from 20 to 40 crucial locations to the detector

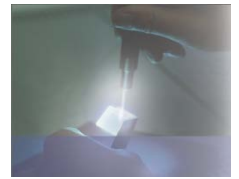**SIGRIST**
PROCESS-PHOTOMETER

Air quality in working areas
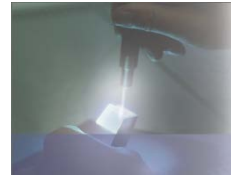
Purpose:

› Dusts in certain concentrations can be injurious to health, i.e. toxic or carcinogenic

› Set limits of dust concentration in the interest of product purity, i.e. in medical engineering

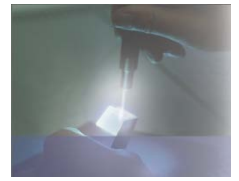› Dust can cause explosions as a result of spontaneous combustion

SIGRIST
PROCESS-PHOTOMETER
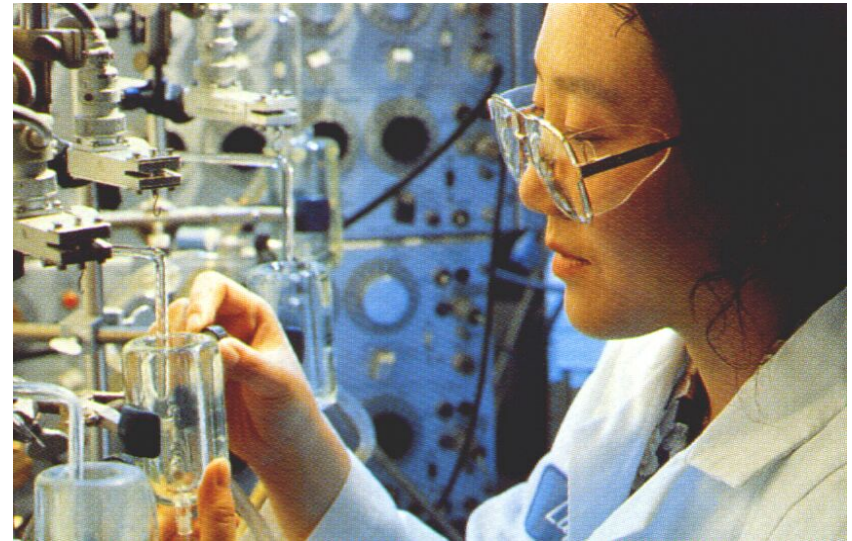
Emission

» Purpose:

  › Optimize the process

  › Reduction of the pollution

  › Comply with the legislation

SIGRIST
PROCESS-PHOTOMETER

Emission – wet gasses
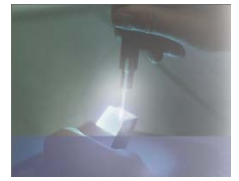

» The StackGuard:

› SIGRIST offers complete PEMS systems for continuous wet stack monitoring

› Compliance with EN14181 standard

› Numerous installations in various industries, power stations, waste incinerators, etc.

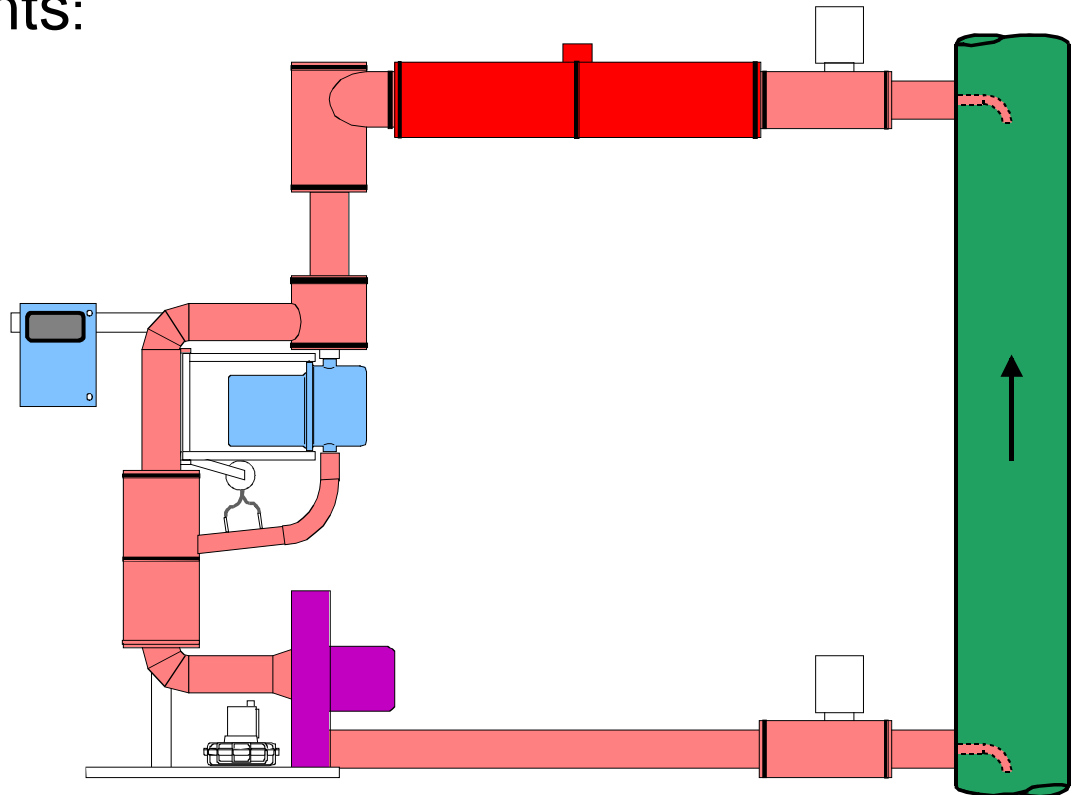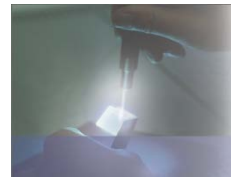› Today mainly replacement business for existing K-/C-type installations

SIGRIST
PROCESS-PHOTOMETER

Emission – wet gasses

» ## System components:

- › Stack

- › Loop line

- › Photometer

- › Heater

- › Control unit

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PROCESS-PHOTOMETER

» ## StackGuard optics
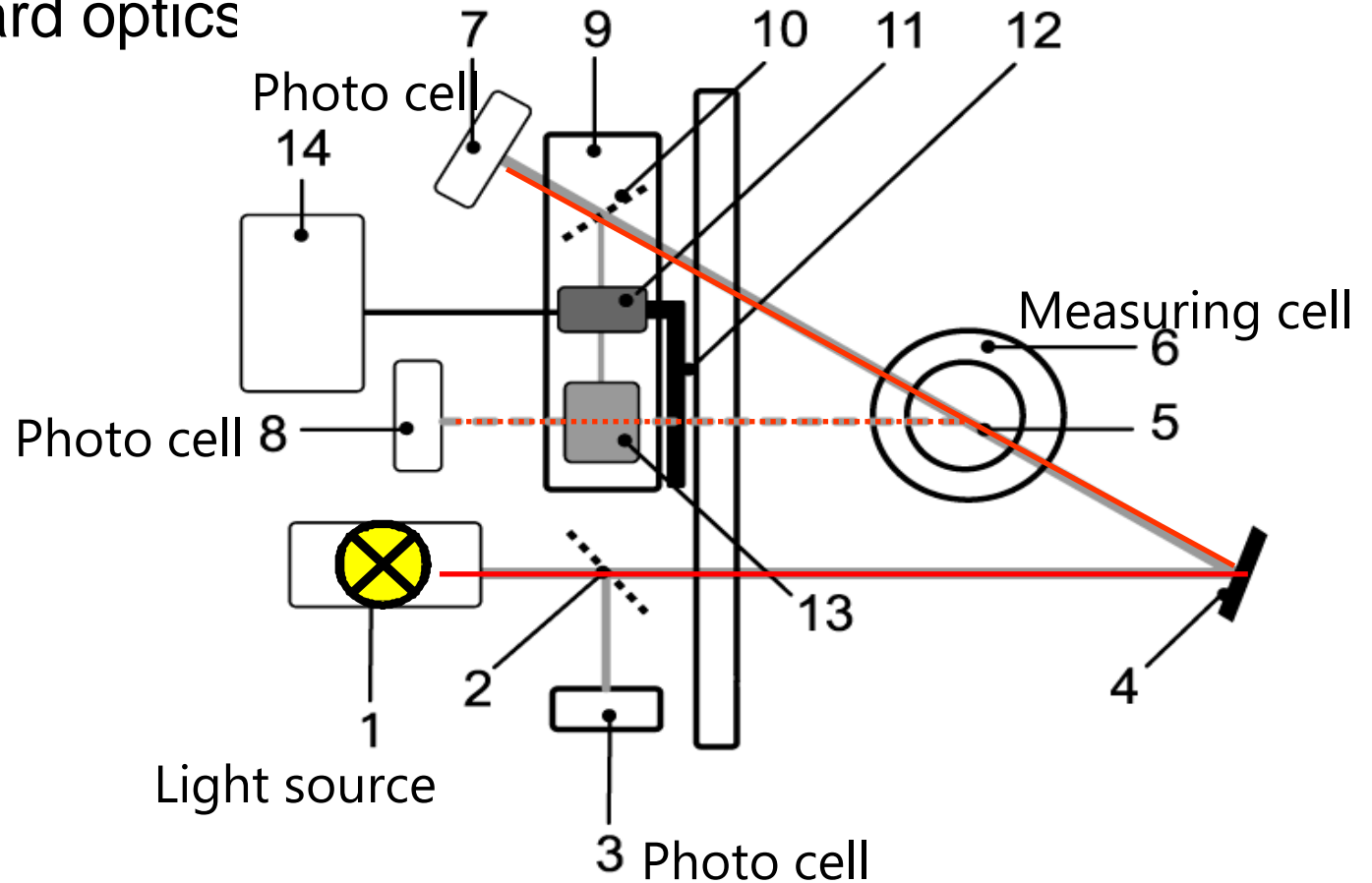
Thank you for your attention

Questions ?

SIGRIST
PROCESS-PHOTOMETER