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## IKA Magnetic Stirrer and Heater

Stirring of liquid samples and heating



Magnetic stirrer with built-in heater is used to stir liquid samples via magnetic stirring bar, which is placed in the sample. The device also heats the sample to desired temperature measured by an external temperature sensor.

**Owner institution:** Slovenian National Building and Civil Engineering Institute

**Location:** Dimičeva ul. 12, Ljubljana

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## Specac Atlas Manual 15-Ton Hydraulic Press

Pellet preparation



Hydraulic press is used for solid KBr pellet preparation for FTIR spectroscopic analysis. Maximum tonnage load is 15. The equipment includes evacuable pellet die for production of 13 mm pellets.

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## Büchi Vacuum Oven with Vacuum Pumps

Heating of samples up to 300 °C in high vacuum



Vacuum oven enables samples to dry in either low vacuum range with a membrane pump or in high vacuum range with rotary vane pump.

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## Agilent Gas Chromatograph with Mass Detector (GC-MS)

Detection and quantification of organic compounds from mixtures



GC-MS is a powerful technique to separate compounds from samples with a large number of components, identify each compound with mass analyzer, and quantify them using external reference compounds.

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## JEOL JSM-IT500 Scanning Electron Microscope

Electronic imaging and EDS elemental analysis



- Electronic imaging up to 300.000x magnification
- Low vacuum mode for non-conducting and high-vacuum sensitive samples
- Secondary electron detector for morphological and backscattered for compositional imaging
- Point, area, line and mapping EDS elemental analysis

**Owner institution:** Slovenian National Building and Civil Engineering Institute

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## Freeze Dryer Christ Alpha 1-4 LSCplus

Freeze drying



Freeze drying uses sublimation under reduced pressure, therefore prevents collapsing of material structure during drying.

Internal freezer down to  $-55^{\circ}\text{C}$ ,  
vacuum pump down to 0.01 mbar,  
maximum ice capacity 4 kg, diameter  $\Phi$   
= 265 mm, volume =  $0.1\text{ m}^3$ .

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## DMA SDTA861e

Dynamic mechanical analysis



Dynamic mechanical analysis (DMA) is a technique used to characterize materials such as polymers, metals, ceramics, and liquids.

With sinusoidal stress applied, the DMA measures complex moduli of elasticity related to phase transitions as well as mechanical and viscoelastic properties of the materials.

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## **Vertical Furnace (nominal 8 m) – will be purchased in 2020**

Testing fire resistance of high (wooden) structure



The vertical furnace enables testing of fire resistance to structures of 8 m (two stories). In combination with combi furnace, it forms a set for testing large structures (nominally 8x4 / 4x8 vertical and 4x8 horizontal)

**Owner institution:** ZAG

**Location:** ZAG Fire Laboratory, Obrtna cona Logatec

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## **Room Corner Test** – will be purchased in 2020

Large-scale reaction to standardized fire test



The equipment measures reaction to fire of the materials in the test room. The room can be fully equipped or simply clad. Thermal power is measured and RtF parameters are derived.

**Owner institution:** ZAG

**Location:** ZAG Fire Laboratory, Obrtna cona Logatec

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## Open Calorimeter and Façade Testing Equipment – will be purchased in 2020

Studying fire processes at model scale / full scale



The device controls smoke extraction and analyzes oxygen, CO, and CO<sub>2</sub> concentration and also time-dependent thermal power released. Additionally, fire effluents are sampled for after analysis using GC-MS.

**Owner institution:** ZAG

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## **Cleaning Plant** – will be purchased in 2020

Cleaning of exhaust gases



- Cleaning particles, acids, and other harmful substances, if any
- Cleaning effluents generated by the furnaces, room corner test, SBI test, smaller tests, and lower-mode calorimeter runs

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