



### C3.6.5 MATERIAL ANALYTICS

C3.6.5.1  
X-ray fluorescence analysis of  
chemical composition

C3.6.5.2  
The chemical composition of  
a brass specimen

X-ray fluorescence analysis of chemical composition (C3.6.5.1)

| Cat. No. | Description  | C3.6.5.1 | C3.6.5.2 |
|----------|--|----------|----------|
| 554 800  | X-ray apparatus  | 1        | 1        |
| 554 861  | X-ray tube, Mo   | 1        | 1        |
| 554 831  | Goniometer   | 1        | 1        |
| 559 938  | X-ray energy detector  | 1        | 1        |
| 554 848  | Set of target alloys   | 1        | 1        |
| 524 013  | Sensor-CASSY 2   | 1        | 1        |
| 524 058  | MCA box  | 1        | 1        |
| 524 220  | CASSY Lab 2  | 1        | 1        |
| 501 02   | BNC cable, 1 m   | 1        | 1        |
| 554 844  | Set of targets for K-line fluorescence                                 |          | 1        |
| 554 846  | Set of targets for L-line fluorescence                                 |          | 1        |
|          | additionally required:<br>PC with Windows XP/Vista/7/8/10 (x86 or x64) | 1        | 1        |

X-ray fluorescence is a method for the non-destructive analysis of the chemical composition of an alloy. Under exposure to X-rays, each of the individual elements emits characteristic X-ray fluorescence, which identifies the element like a fingerprint.

In experiment C3.6.5.1, four alloys are analyzed by means of X-ray fluorescence and the composition is determined qualitatively. The alloys are chrome-nickel steel, two brass alloys and a rare earth magnet.

In experiment C3.6.5.2, the composition of a brass alloy is analyzed quantitatively. The weight percents of each component are calculated from the strength of the X-ray fluorescence.