INVESTIGATIONS OF SAMPLES UNDER DIFFERENT TEMPERATURE AND HUMIDITY CONDITIONS

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Humidity influences various properties of materials of pharmaceutical, chemical, or geological relevance. Since X-ray diffraction is the most common used non-destructive technique to investigate material properties, it is of high interest to study the impact of humidity in-situ. This type of investigation are done since a couple of years. On the other hand, the absolute water content in a humid atmosphere scales with the temperature. This means, that the impact on the material properties does not only depend on the humidity but also on the environmental temperature. For this type of investigations it is required to control both the temperature and the humidity precisely. Furthermore, the relation between relative humidity and temperature must be taken into account in parallel to have well defined environmental sample conditions for an individual X-ray diffraction measurement.

The goal of the talk is to show the opportunities of the new temperature-humidity controller combined with a temperature chamber with dedicated sample holder. X-ray diffraction measurements are presented and discussed.