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Neutron Activation Analysis at MLZ

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Recently, the NAA instrument has been fully integrated into the MLZ user system. The FRM II reactor features various short and long high-flux irradiation positions in a well-thermalized neutron field in the range of 10^{13} – 10^{14} $\text{cm}^{-2}\text{s}^{-1}$ with a thermal-to-epithermal ratio up to 12,000. The counting of the irradiated samples take place in a near laboratory of the Radiochemie München (RCM), where currently three HPGe detectors with digital spectrometers are available for NAA. We plan to upgrade the data acquisition by establishing a new smart-controlled sample handling in the near future. This includes the application of list mode for optimum adaption to time dynamics. The current status of the instrument and developments will be discussed in the presentation, as well as NAA applications at MLZ coming from a wide field of science. They are focused on cultural heritage, geology, cosmochemistry, recycling technologies, as well as biology. In particular, we have observed an increasing demand for the development of new standard reference materials needed for other analytical methods and specialized applications like the characterization of recyclables, or the mobile analysis of cultural-heritage objects.

Several works are closely connected to projects at the PGAA instrument, like the planned smart-control for NAA, which can be applied for both instruments. A cyclic in-beam NAA at the PGAA instrument will be shown in the presentation of Zs. Révay. The combination of NAA and PGAA results is also used in various user projects since it increases the number of the elements significantly.

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