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A Monte Carlo study of the influence of neutron source spectrum on PGNAA facility performance in cement raw material analysis

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Hundreds of cement factories use online bulk material analyzers to improve their quality control for both raw material and kiln feed, and reduce their variability. The most used technology for online analysis is Prompt Gamma Neutron Activation Analysis (PGNAA), with ^{252}Cf as the neutron source. A simulation study has been done to develop the setup geometry and investigate the possibility of using other kinds of neutron sources as an alternative option. Application of neutron generators and also (α, n) neutron sources in the PGNAA facility has been discussed.

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