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## Development of An On-line Uranium Enrichment Monitor

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An on-line enrichment monitor was developed to measure the enrichment of UF<sub>6</sub> flowing through the processing pipes in centrifuge uranium enrichment plant. A NaI(Tl) detector was used to measure the count rates of the 186 keV gamma ray emitted from <sup>235</sup>U, and the total quantity of uranium was determined from thermodynamic characteristics of gaseous uranium hexafluoride. The results show that the maximum relative standard deviation is less than 1% when the measurement time is 120 s or more and the pressure is more than 2 kPa in the measurement chamber. There are two working models for the monitor. The monitor works normally in the continuous model, When the gas's pressure in the pipe fluctuates greatly, it can work in the intermittent model, and the measurement result is very well. The background of the monitor can be measured automatically periodically. It can control automatically electromagnetic valves open and close, so as to change the gas's quantity in the chamber. It is a kind of unattended and remote monitor, all of data can be transfer to central control room. It should be effective for nuclear materials accountability verifications and materials balance verification at uranium enrichment plant by using the monitor to monitor Uranium enrichment of gaseous uranium hexafluoride in the output end of cascade continuously.

### Country or International Organization

China

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