

A CADMIUM FILTER TECHNIQUE IN
RIABLE-ENERGY NEUTRON ACTIVATION ANALYSIS

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by

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NOMENCLATURE

\dot{N}	time rate of change of the number of product nuclei
σ	microscopic neutron absorption cross section ($\text{cm}^2/\text{nucleus}$)
Φ	neutron flux ($\text{neutrons}/\text{cm}^2 \cdot \text{sec}$)
λ	decay constant (min^{-1})
N	number of product nuclei
N_0	number of parent nuclei
t_i	time of irradiation (min)
A_0	activity at the end of an irradiation (d/min)
A	activity (d/min)
A_s	saturation activity (d/min)
A_{st}	activity normalized to standard irradiation (d/min)
t_w	decay time (min)
f	fraction or concentration of an element in a given sample
y_i	total counts in the i -th channel for the unknown sample
a_{ij}	total counts in the i -th channel of the j -th reference sample
e_i	error or residual term for the i -th channel
\underline{Y}	$(n \times 1)$ vector of data from unknown sample
\underline{A}	$(n \times m)$ matrix of data from reference samples
\underline{f}	$(m \times 1)$ vector of estimated concentrations
\underline{e}	$(n \times 1)$ error vector
\underline{e}^T	transpose of \underline{e}
\underline{W}	$(n \times n)$ weighting matrix
t_c	counting time (min)
t_s	standard irradiation time (min)
C	total number of counts accumulated during a counting interval
A_1	activity at the beginning of a count (d/min)