Electronic Supplementary Information

The ratio between the energy loss and the depth is calculated with the algorithm:

\[
E_{i}^{\text{in}} = E_{i-1}^{\text{in}} - \frac{\Delta d}{\cos(\theta + 12^\circ)} \cdot \text{Sp}(E_{i-1}^{\text{in}}) \text{with } i = 1 \text{ to } n
\]

\[
E_{0}^{\text{in}} = E_{0}
\]

\[
d = n \cdot \Delta d
\]

\[
E_{0}^{\text{out}} = k_{1} \cdot E_{n}^{\text{in}} - Q_{\text{in}}
\]

\[
E_{j}^{\text{out}} = E_{j-1}^{\text{out}} - \frac{\Delta d}{\cos(\theta)} \cdot \text{Sp}(E_{j-1}^{\text{out}}) \text{with } j = 1 \text{ to } n
\]

where

- \( E_{0} \): primary energy of the projectile
- \( E_{i}^{\text{in}} \): energy of the projectile after passing the \( i \)th layer on the way into the bulk
- \( \Delta d \): thickness of the \( n \) layer
- \( d \): depth
- \( E_{0}^{\text{out}} \): energy of the projectile after back scattering
- \( k \): kinematic factor of the energy loss during back scattering
- \( E_{j}^{\text{out}} \): energy of the projectile after passing the \( j \)th layer on the way back to the surface
- \( \text{Sp} \): stopping power
- \( \theta \): angle between the surface normal and the direction to the detector, where 78° − \( \theta \) is the angle between the direction of the impinging ions and the surface, the angle of incidence