Appendix C. Equations

Equation 1 – HPLC column linear velocity

\[ F_{2.1} = \left( \frac{d_{2.1}}{d_{4.6}} \right) F_{4.6} \]

F = Flow rate
d = Column Diameter

Equation 2 - Van Deemter Equation

\[ H = A + \frac{B}{u} + C \cdot u \]

H = Plate height
A = Eddy diffusion
B = Longitudinal Diffusion
C = Mass transfer kinetics
u = Linear Velocity

Equation 3 - Expanded Van Deemter Equation

\[ H = 2 \cdot d_p + \frac{2G D_m \mu}{\mu} + \frac{\omega (d_p)^2 \mu}{d_m} + \frac{R d_f^2 \mu}{D_s} \]

\( \lambda \) = particle shape
\( d_p \) = particle diameter
\( D_m \) = mobile phase diffusion coefficient
\( D_s \) = stationary phase diffusion coefficient
\( d_f \) = film thickness
G, \( \omega \) and R are constants

Equation 4 – Sensitivity

\[ Sensitivity = \frac{TP}{TP + FN} \]

TP = Number of True Positives
FN = Number of False Negatives

Equation 5 - Specificity

\[ Specificity = \frac{TN}{TN + FP} \]

TN = Number of True Negatives
FP = Number of False Positives