energies

MDPI

Supplementary Materials

Equation (36) after substituting in it (35) and $x_g = x$, we obtain

$$z = \frac{1}{\rho_o}[n(J_3 + CJ_2) - m(J_2 + CJ_1)] \tag{S1}$$

or

$$z = \frac{1}{\rho_o}[nJ_3 - mCJ_1 + (nC - m)J_2] \tag{S2}$$

where:

$$J_1 = \int_o^1 \frac{x^2}{1 + Cx^2} dx = \frac{1}{C}(1 - \frac{\mathrm{arctg}\sqrt{C}}{\sqrt{C}}) \tag{S3}$$

$$J_2 = \int_o^1 \frac{x}{1 + Cx^2} dx = \frac{\ln(1 + C)}{2C} \tag{S4}$$

$$J_3 = \int_o^1 \frac{dx}{1 + Cx^2} = \frac{\mathrm{arctg}\sqrt{C}}{\sqrt{C}} \tag{S5}$$

By substituting for Equation (S2) of the solutions of integrals (S3) to (S5) after ordering, we obtain Equation (37).