Supporting information available.

Tf saturation $S_{ms} = b$

$$b = \frac{n(\mathrm{Fe})}{2 \cdot n(\mathrm{T})} = \frac{N}{N_{max}} = \frac{n(\mathrm{Fe})}{n_{max}(\mathrm{Fe})}$$

$$R_x = \frac{n_{x,57}}{n_{x,56}}$$

$$R_y = \frac{n_{y,57}}{n_{y,56}}$$

$$R_{bx} = \frac{n_{bx,57}}{n_{bx,56}} = \frac{n_{x,57} + n_{y,57}}{n_{x,56} + n_{y,56}}$$

$$b = \frac{n(\mathrm{Fe})}{n_{max}(\mathrm{Fe})} = \frac{n_x(\mathrm{Fe})}{n_x(\mathrm{Fe}) + n_y(\mathrm{Fe})}$$

$$b_y = \frac{n_y(\mathrm{Fe})}{n_x(\mathrm{Fe}) + n_y(\mathrm{Fe})}$$

$$= \frac{n_x(\mathrm{Fe}) + n_y(\mathrm{Fe})}{n_x(\mathrm{Fe}) + n_y(\mathrm{Fe})} - \frac{n_x(\mathrm{Fe})}{n_x(\mathrm{Fe}) + n_y(\mathrm{Fe})}$$

$$= 1 - b$$

$$R_{bx} = \frac{n_{x,57} + n_{y,57}}{n_{x,56} + n_{y,56}} = \frac{x_{x,57} \cdot n_x(\mathrm{Fe}) + x_{y,57} \cdot n_y(\mathrm{Fe})}{x_{x,56} \cdot n_x(\mathrm{Fe}) + x_{y,56} \cdot n_y(\mathrm{Fe})} \quad \Big| \cdot \frac{n_x(\mathrm{Fe}) + n_y(\mathrm{Fe})}{n_x(\mathrm{Fe}) + n_y(\mathrm{Fe})}$$

$$R_{bx} = \frac{x_{x,57} \cdot \dfrac{n_x(\mathrm{Fe})}{n_x(\mathrm{Fe}) + n_y(\mathrm{Fe})} + x_{y,57} \cdot \dfrac{n_y(\mathrm{Fe})}{n_x(\mathrm{Fe}) + n_y(\mathrm{Fe})}}{x_{x,56} \cdot \dfrac{n_x(\mathrm{Fe})}{n_x(\mathrm{Fe}) + n_y(\mathrm{Fe})} + x_{y,56} \cdot \dfrac{n_y(\mathrm{Fe})}{n_x(\mathrm{Fe}) + n_y(\mathrm{Fe})}}$$

$$R_{bx} = \frac{x_{x,57} \cdot b + x_{y,57} \cdot (1 - b)}{x_{x,56} \cdot b + x_{y,56} \cdot (1 - b)}$$

$$R_{bx} \cdot \left[x_{x,56} \cdot b + x_{y,56} \cdot (1 - b)\right] = x_{x,57} \cdot b + x_{y,57} \cdot (1 - b)$$

$$R_{bx} \cdot x_{x,56} \cdot b + R_{bx} \cdot x_{y,56} \cdot (1 - b) = x_{x,57} \cdot b + x_{y,57} \cdot (1 - b)$$

$$R_{bx} \cdot x_{x,56} \cdot b + R_{bx} \cdot x_{y,56} - R_{bx} \cdot x_{y,56} \cdot b = x_{x,57} \cdot b + x_{y,57} - x_{y,57} \cdot b$$

$$b \cdot \left(R_{bx} \cdot x_{x,56} - R_{bx} \cdot x_{y,56} - x_{x,57} + x_{y,57}\right) = x_{y,57} - R_{bx} \cdot x_{y,56}$$

$$b = \frac{x_{y,57} - R_{bx} \cdot x_{y,56}}{R_{bx} \cdot x_{x,56} - R_{bx} \cdot x_{y,56} - x_{x,57} + x_{y,57}}$$

$$b = \frac{x_{y,57} - R_{bx} \cdot x_{y,56}}{R_{bx} \cdot x_{x,56} - R_{bx} \cdot x_{y,56} - x_{x,57} + x_{y,57}}$$

$$b = \frac{x_{y,57} - R_{bx} \cdot x_{y,56}}{R_{bx} \cdot x_{x,56} - x_{x,57} + x_{y,57} - R_{bx} \cdot x_{y,56}}$$

$$b = \frac{\frac{R_{y,57}}{\sum_i R_{y,i}} - R_{bx} \cdot \frac{R_{y,56}}{\sum_i R_{y,i}}}{R_{bx} \cdot \frac{R_{x,56}}{\sum_i R_{x,i}} - \frac{R_{x,57}}{\sum_i R_{x,i}} + \frac{R_{y,57}}{\sum_i R_{y,i}} - R_{bx} \cdot \frac{R_{y,56}}{\sum_i R_{y,i}}}$$

$$b = \frac{\frac{R_{y,57}}{\sum_i R_{y,i}} - R_{bx} \cdot \frac{1}{\sum_i R_{y,i}}}{R_{bx} \cdot \frac{1}{\sum_i R_{x,i}} - \frac{R_{x,57}}{\sum_i R_{x,i}} + \frac{R_{y,57}}{\sum_i R_{y,i}} - R_{bx} \cdot \frac{1}{\sum_i R_{y,i}}}$$

$$\frac{1}{b} = \frac{R_{bx} \cdot \frac{1}{\sum_i R_{x,i}} - \frac{R_{x,57}}{\sum_i R_{x,i}} + \frac{R_{y,57}}{\sum_i R_{y,i}} - R_{bx} \cdot \frac{1}{\sum_i R_{y,i}}}{\frac{R_{y,57}}{\sum_i R_{y,i}} - R_{bx} \cdot \frac{1}{\sum_i R_{y,i}}}$$

$$\frac{1}{b} = \frac{R_{bx} \cdot \frac{1}{\sum_i R_{x,i}} - \frac{R_{x,57}}{\sum_i R_{x,i}}}{\frac{R_{y,57}}{\sum_i R_{y,i}} - R_{bx} \cdot \frac{1}{\sum_i R_{y,i}}} + 1$$

$$\frac{1}{b} = 1 + \frac{\left(R_{bx} - R_{x,57}\right) \cdot \frac{1}{\sum_i R_{x,i}}}{\left(R_{y,57} - R_{bx}\right) \cdot \frac{1}{\sum_i R_{y,i}}}$$

$$\frac{1}{b} = 1 + \frac{\left(R_{bx} - R_{x,57}\right)}{\left(R_{y,57} - R_{bx}\right)} \cdot \frac{\sum_i R_{y,i}}{\sum_i R_{x,i}}$$

$$b = \frac{1}{1 + \frac{\left(R_{bx} - R_{x,57}\right)}{\left(R_{y,57} - R_{bx}\right)} \cdot \frac{\sum_i R_{y,i}}{\sum_i R_{x,i}}}$$

$$b = \frac{1}{1 + \frac{R_{bx} - R_x}{R_y - R_{bx}} \cdot \frac{\sum_i R_{y,i}}{\sum_i R_{x,i}}}$$