Supplementary Data S1

The term appearing in (16) should be read as:

$$\left[diffc_f\right]_{i,k}^n = \left(\frac{c_{f_{i,k+1}}^n - 2c_{f_{i,k}^n} + c_{f_{i,k-1}}^n}{\delta\ \xi^2}\right)\left\{\frac{1}{R_i^2} + \varepsilon^2\left(\frac{\partial\ \xi}{\partial z}\right)_{i,k}^2\right\} + \left(\frac{c_{f_{i,k+1}}^n - c_{f_{i,k-1}}^n}{2\delta\ \xi}\right)$$

$$\times\left\{\frac{1}{R_i\left\{R_i\left(\xi_k - 1\right) + R_{tl_i}\right\}} + \varepsilon^2\left(\frac{\partial^2\xi}{\partial z^2}\right)_{i,k} + \frac{\varepsilon^2}{R_i^2}\left(\frac{dR}{dz}\right)_i\left(\left(\xi_k - 1\right)\left(\frac{dR}{dz}\right)_i + \left(\frac{dR_{tl}}{dz}\right)_i\right)\right\}$$

$$+ \varepsilon^2\left(\frac{c_{f_{i+1,k}}^n - 2c_{i,k}^n + c_{f_{i-1,k}}^n}{\delta\ \xi^2}\right) + 2\ \varepsilon^2\left(\frac{c_{f_{i+1,k+1}}^n - c_{f_{i+1,k-1}^n} - c_{f_{i-1,k+1}}^n + c_{f_{i-1,k-1}}^n}{4\delta\ \xi\ \delta z}\right)$$

The reaction term appearing in equations (17)−(18) can be written as:

$$\left[reac_{SR}\right]_{i,k}^n = Da_{SR}\left\{\left(c_f\right)_{i,k}^n\left(c_{SR}^{\max} - \left(c_{SR}\right)_{i,k}^n\right) - \frac{\left(c_{SR}\right)_{i,k}^n}{k_{eq_{SR}}}\right\},$$

and

$$\left[reac_{ECM}\right]_{i,k}^n = Da_{ECM}\left\{\left(c_f\right)_{i,k}^n\left(c_{ECM}^{\max} - \left(c_{ECM}\right)_{i,k}^n\right) - \frac{\left(c_{ECM}\right)_{i,k}^n}{k_{eqECM}}\right\}.$$

$$\left(Da_{ECM} = 8.0 \times 10^5,\ \mathrm{Da_{SR}} = 32.0 \times 10^7,\ \mathrm{k_{eq_{ECM}}} = 3.8 \times 10^2,\ \mathrm{k_{eq_{SR}}} = 5.0 \times 10^6\right).$$