CHAPTER 6

CONCLUSION

The preceding sections report on two variations of the application of electric fields to modify transport phenomena pertaining to solid-liquid contacting.

The first is the application to mixing of solid-liquid. The rates of movement of interface between solid and liquid are studied involving various systems. A correlation for the movement of interface has resulted in the following equation:

\[
\frac{t_x}{x/g} = 1.7 \times 10^7 \left[ \frac{Ad}{x^{3/2} d_s^{1/3}} \right]^{-0.69} \left[ \frac{t_r \mu_s^2}{P E^{1/5} \Delta \rho^3} \right]^{-0.36} \left[ \frac{\mu_s t_r}{\Delta \rho x^2} \right]^{0.61}
\]

\[
\begin{bmatrix}
2 \epsilon_1 \epsilon_2 \\
\epsilon_1 + \epsilon_2
\end{bmatrix} \frac{(d + x)}{d_s}^{0.14}
\]

In mass transfer it has been shown that significant increase in the rates can be achieved by the application of electrical fields, depending on the response of the systems. The possible mechanisms have been discussed. As a long range application, one may visualise a day when biological transport rates could be controlled using very low and tolerable potentials.