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ACTIVITY COEFFICIENTS AND THE SOLVATION EFFECT

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In this communication the effect of solvation on the analysis of activity coefficients in electrolytic solutions is examined in a systematic way. Previous attempts have assumed that the form of the equations assumed for the non-solvated case would hold true for the solvated case too. A relation was first derived between the activity coefficients for the solvated and the bare ions for a multicomponent system. Such an equation has been earlier derived rigorously only for the binary solution. This relation is used together with the equations developed in the previous communication to obtain the activity coefficient of the bare ion. If a virial type of expansion is assumed for $\ln a_1$ it is shown that the expression for $\ln \gamma_i$ is more complicated than is usually assumed. The effect of the difference in approach is discussed for some examples from the literature; our analysis is able to fit the data better with smaller virial coefficients.