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Fig. 1: Polarization curves for 0_2 reduction on polycrystalline gold at 9 s⁻¹ and 10 mV s⁻¹ in a 0_2 -saturated 1 M NaOH solution: (------) "100" surface, (...) "111" surface; electrode area: 0.126 cm²



Fig. 2: Polarization curves for 0_2 reduction on polycrystalline gold at 10 mV s⁻¹ in a 0_2 -saturated 10⁻² M HCl 0_4 solution: (-----) "100" sur face, (...) "111" surface; electrode area: 0.126 cm²

<u>Chronopotentiometric and Impedance Studies at the</u> <u>Nitrobenzene-Water interface in the presence of</u> <u>1:2, Electrolytes</u>

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Increasing interest have been given to interfaces between two immiscible electrolyte solutions due to their aplication in ion selective electrodes and electrochemically assisted ion transfer.

The interface between water and nitrobenzene have been studied in the presence of 1:1 and 2:2 electrolytes in the aqueous phase 1,2 . Here it is reported a study of the properties of the water nitrobenzene interface in the presence of 1:2 electrolytes in the aqueous phase and TPBTBA in the organic phase. The aqueous phase were 0.1 <u>M</u> solutions in CaCl₂, SrCl₂, BaCl₂, and MgCl₂.

Cyclic Voltammetry does not show significant dependence of the polarization potential limits on the nature of the alkaline earth cation . The influence of the nature of the cation is more visible in the chronopotentiometric data in fig. 1. The data indicates that the transference is diffusion controlled^{3,4} but the relation between the transition times and the values of the imposed current densities is not as simple as described for other systems⁵.

Impedance spectra for the interface was obtained and typical results are illustrated in fig. 2. The nature of the cation is put in evidence in the semicircle observed at high frequencies. Although the semicircle observed on the impedance diagram at high frequencies is an experimental artifact due to the reference electrode circuitry¹ the dependence of the radius of the semicircle on the cation may be a result of the different conductivities of the solutions. From the low frequency domain the

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differential capacity of the interface can be obtained and will be presented and discussed together with the other data.

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Fig. 1- Effect of the salt on the chronopotentiograms obtained at the Nitrobenzene-Water interface; a) MgCl₂, b) CaCl₂, c) SrCl₂, d) BaCl₂.



Fig. 2- Effect of the salt on the impedance spectra of the Nitrobenzene-Water interface; a) MgCl₂, b) CaCl₂, c) SrCl₂.