



## Vortrag



# **Experimental investigation of the action of "magnetic forces" on hydrodynamics and mass transfer in electro-chemistry**

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The action of an external magnetic field on the mass transfer in electro-chemistry can be explained by the action of two types of force:

1. the Lorentz/Laplace force due to the interaction of the imposed current density with an external magnetic field
2. the purely magnetic force due to the gradient of a magnetic field.

Taking into account the expression of the magnetic potential, it can be deduced that the magnetic force could be active in a homogeneous magnetic field under the action of a gradient of concentration of a paramagnetic electro-active species. The existence of this force was and is controversially discussed by some authors when some experimentalists seem to have observed its effect.

Up to now the experimental results were focused only on the characterisation of the mass transfer and have concerned mainly circular electrodes. We have build a new facility to measure in parallel the mass transfer evolution and the velocity in a square electrochemical cells immersed in an electrolyte and submitted to the action of an homogeneous magnetic field, the objective being to "suppress" any effect which could be attributed to the electromagnetic forces.

A phenomenological approach of the phenomena observed will be given to explain the law of evolution (velocity and mass transfer) versus the magnetic field intensity.

Termin: **16. Februar 2011, 9:15 Uhr**  
Ort: **ZEU 150A**

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