

ENGINEERING THE SIMPLEST GRAVITY CONTROL CELL

BY

Fran De Aquino

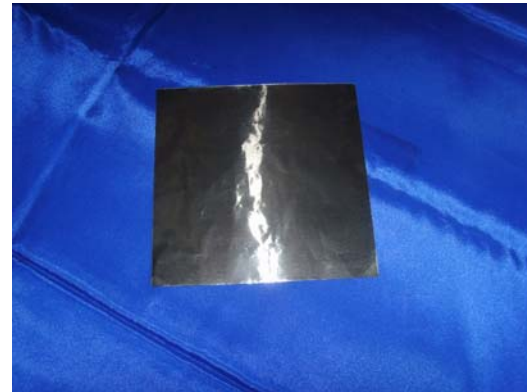
Physics Department, Maranhao State University- UEMA, Brazil
deaquino@uema.br

2009

ENGINEERING THE SIMPLEST GRAVITY CONTROL CELL



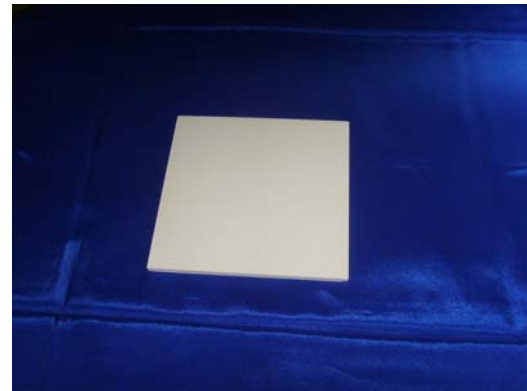
(1)
Aluminum foil
(7.5m X 0.45m; 10.5 microns thickness)



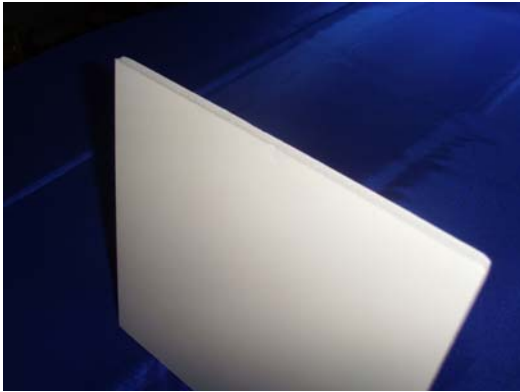
(3)
A 15cm square Aluminum foil of 10.5 microns thickness with the following characteristics: $\mu_f=1$;
 $\sigma=3.82 \times 10^7 \text{ S.m}^{-1}$; $\rho=2700 \text{ Kg.m}^{-3}$



(2)
Chemical characteristics
Al 98.02%; Fe 0.80%; Si 0.70%;
Mn 0.10%; Cu 0.10%; Zn 0.10%;
Ti 0.08%; Mg 0.05%; Cr 0.05%.



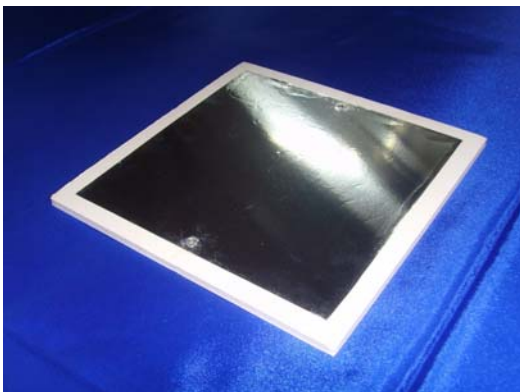
(4)
A 17 cm square *Foam Board* plate of 6mm thickness



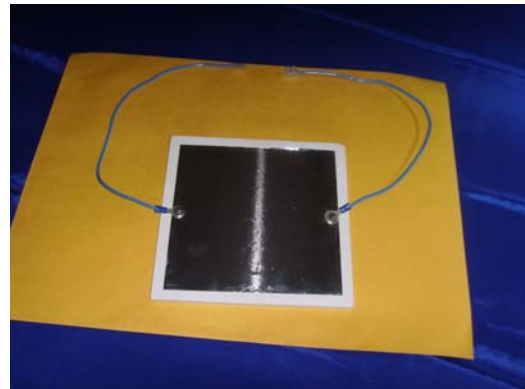
(4)
Foam Board



(6)
Ends of the connections



(5)
The 15cm square Aluminum foil of 10.5 microns thickness fixed on the 17 cm square *Foam Board*



(7)
The Simplest GCC (finished)

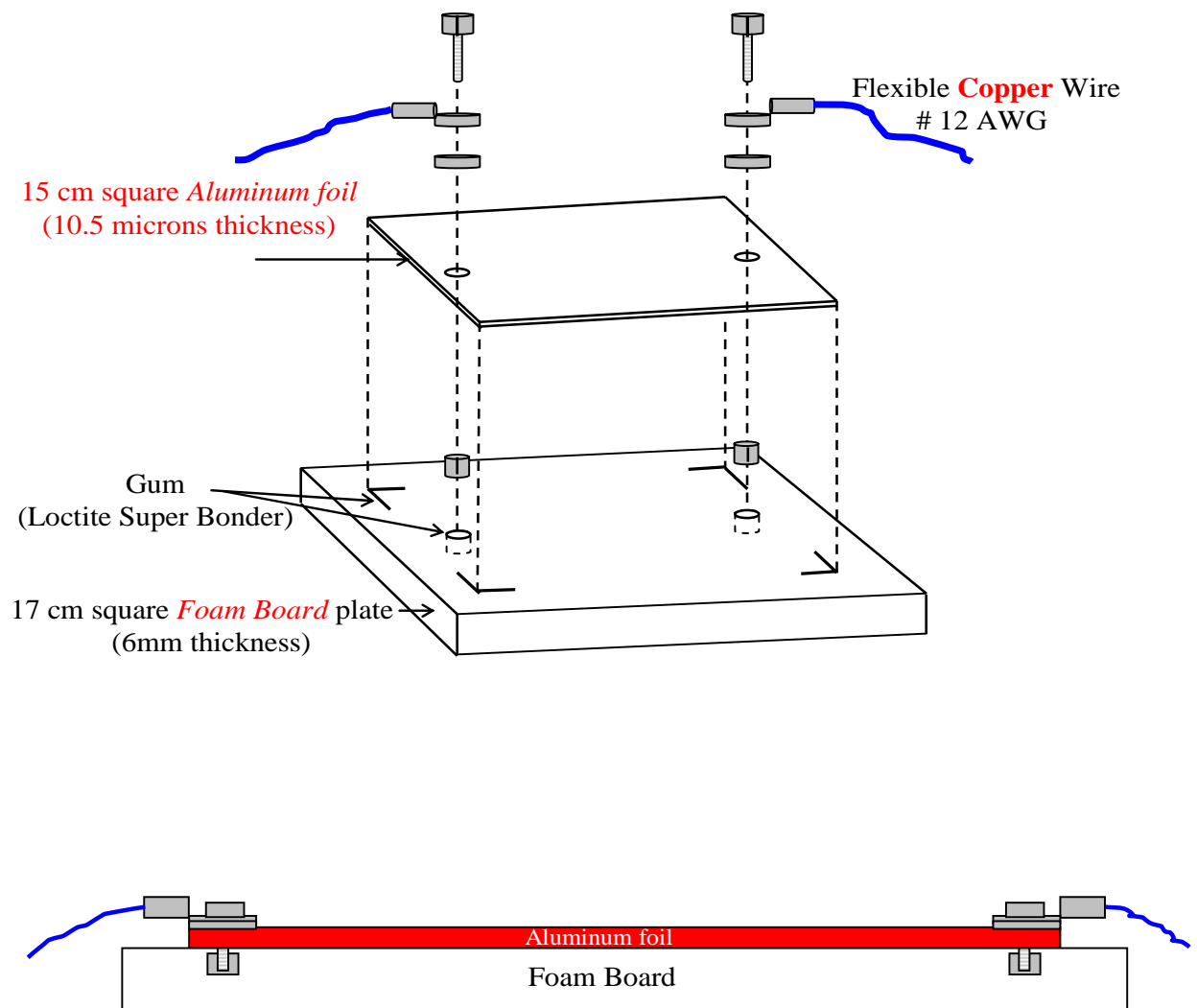


Fig. A – Details of the Simplest *Gravity Control Cell* (GCC).

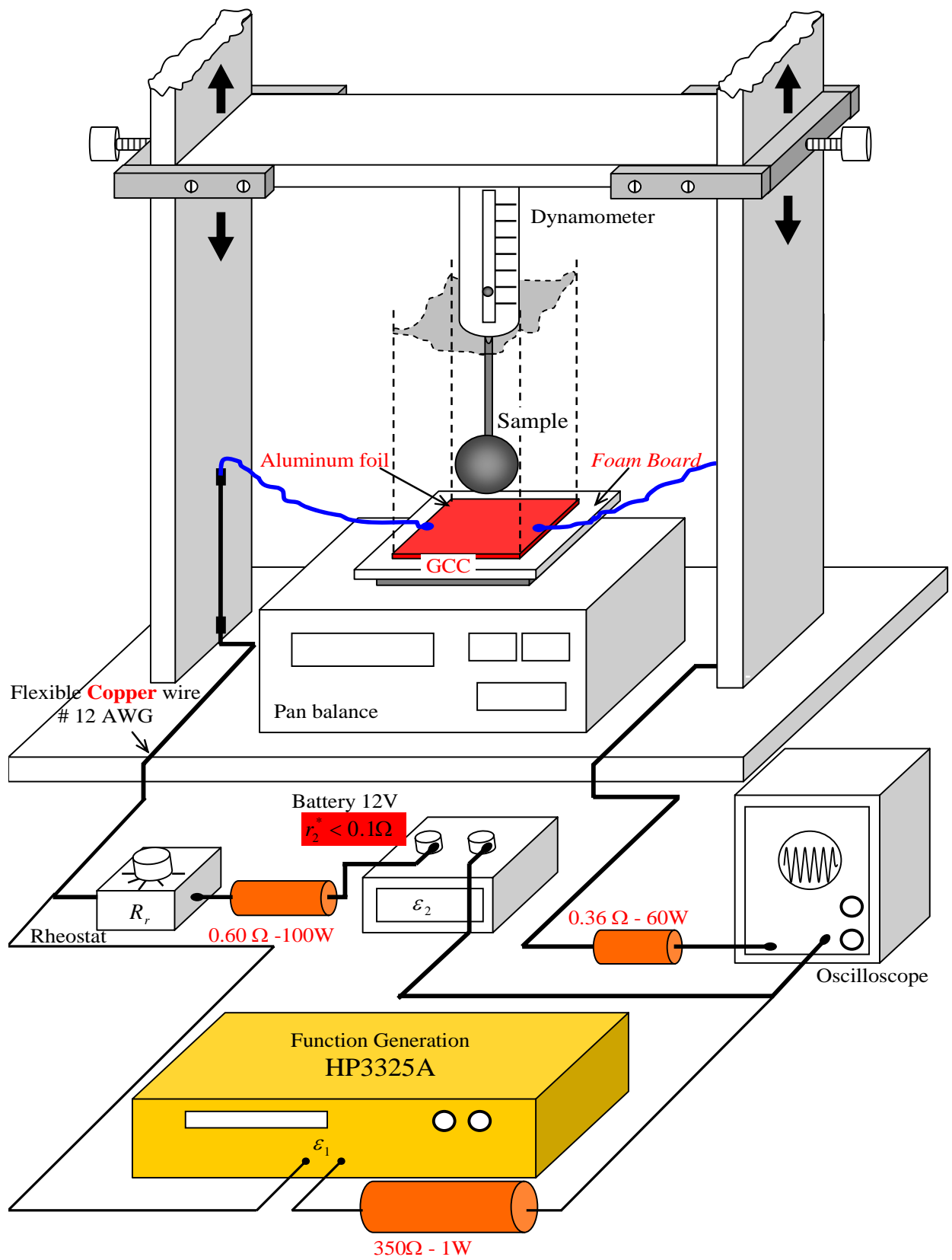
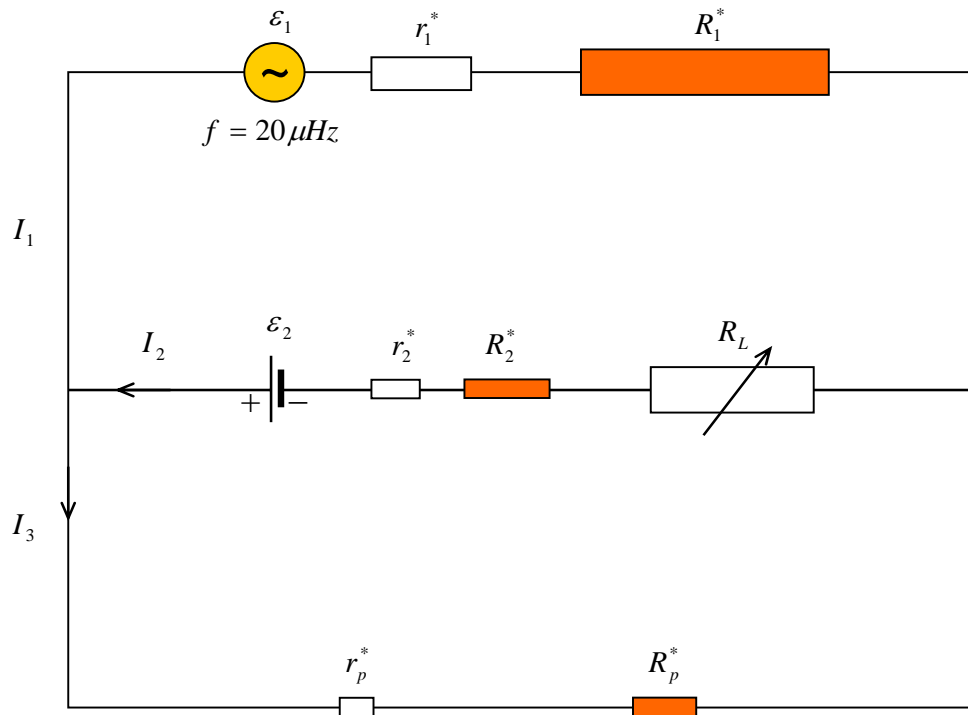


Fig. B – Experimental Set-up.



$\varepsilon_1 = 7.5 \text{ V (rms)}$ Function Generator HP3325A

$r_1^* = 50 \Omega$

$R_1^* = 350 \Omega - 1 \text{ W}$

$\varepsilon_2 = 12 \text{ V DC}$

$r_2^* < 0.1 \Omega$ (Battery)

$R_2^* = 0.60 \Omega - 100 \text{ W}$

$r_p^* = 2.5 \times 10^{-3} \Omega$

$R_p^* = 0.36 \Omega - 60 \text{ W}$

$I_1^{\max} = 30 \text{ mA (rms)}$

$I_2^{\max} = 12.5 \text{ A}$

$I_3^{\max} \cong 12.5 \text{ A (rms)}$

Fig. C – Equivalent Electric Circuit