INTERNATIONAL ATOMIC ENERGY AGENCY
UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION

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H4.SMR/193 - 49

"COLLQUE INTERNATIONAL SUR LA SCIENCE DES MATERIAUX POUR L'ENERGIE".
(26 août - 11 septembre 1986).

"PASSIVATION LE SILICIUM POLYCRISTALLIN PAR L'HYDROGENE MOLECULAIRE".

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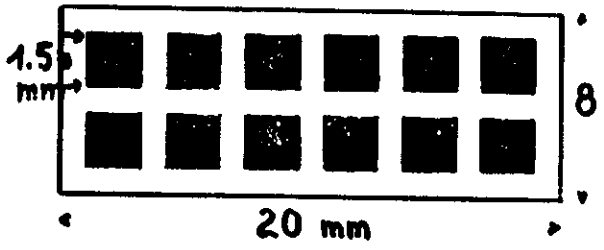
Passivation le Silicium Polycristallin Par l'hydrogène moléculaire

Methodes experimentales



Si poly CGE

photopiles : Photowatt

12 diodes mesa N^+P

-mesures :

globales – L_{neff} (I-V ; C-V ; R.S.)

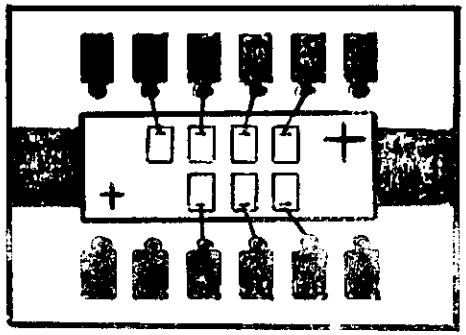
locales – LBIC – L_n local – S (EBIC – Photo σ)] 99 µW/cm²

- Aprés décapage régions N^+

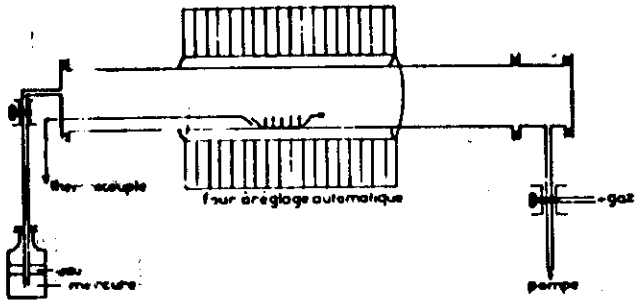
– évaluations des dislocations N_{dis}

– " – des Longueurs de joints / unité de surface

Methodes experimentales



7 diodes schottky Cr_Si semitransparente



Dispositif utilisé pour les traitements sous hydrogène moléculaire.

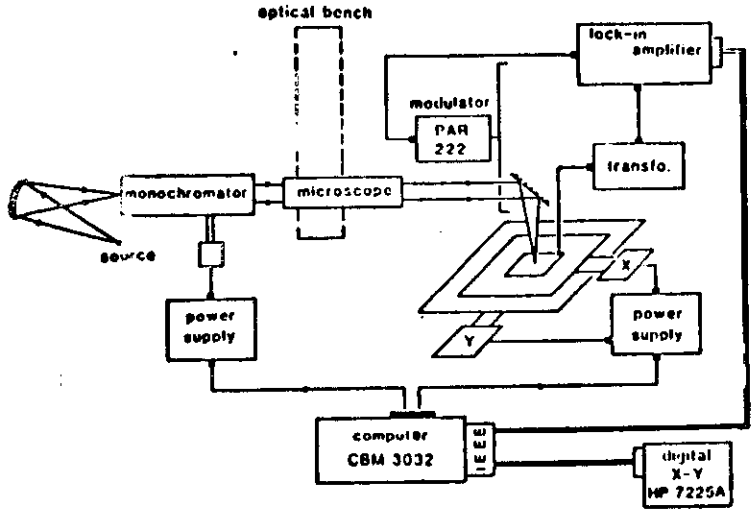
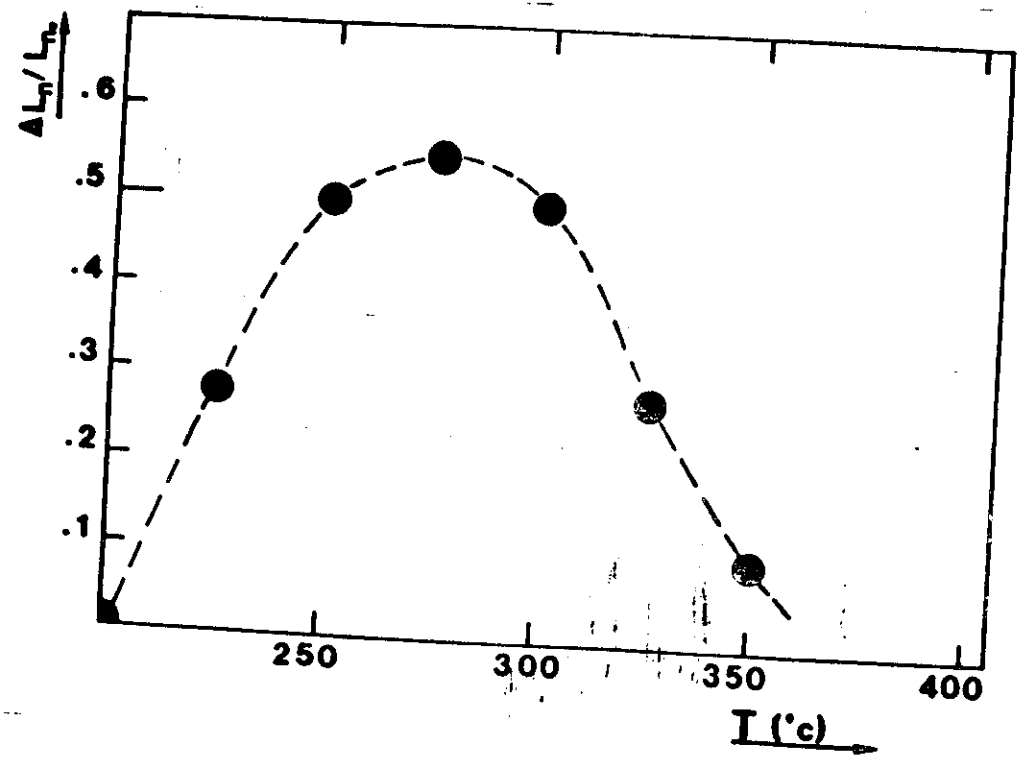
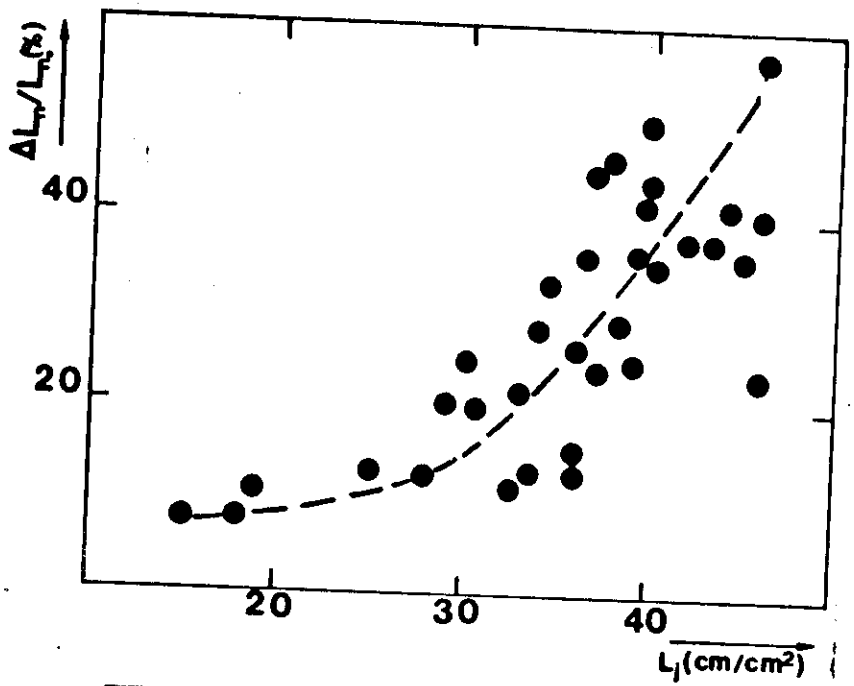
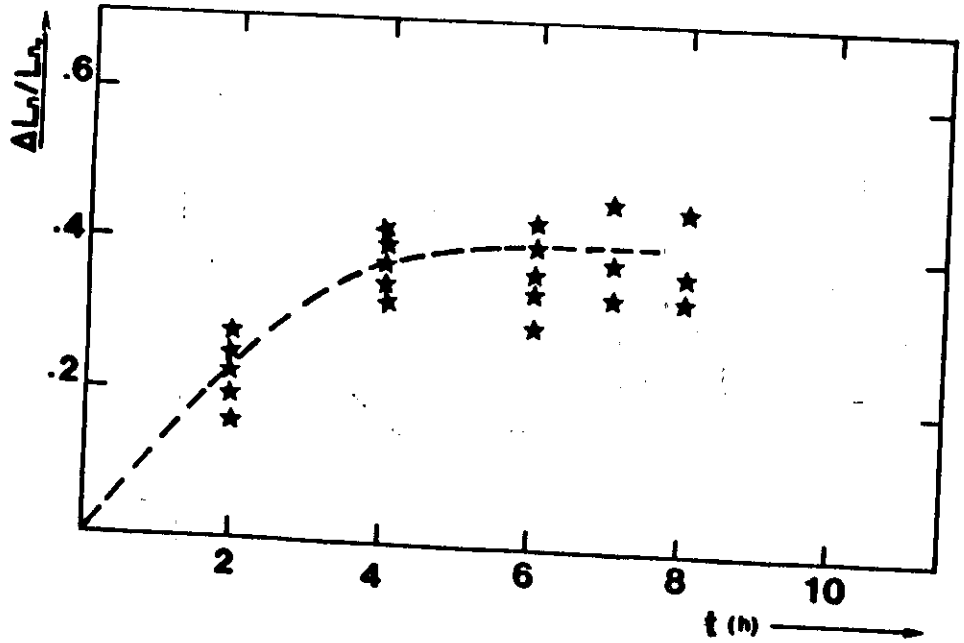
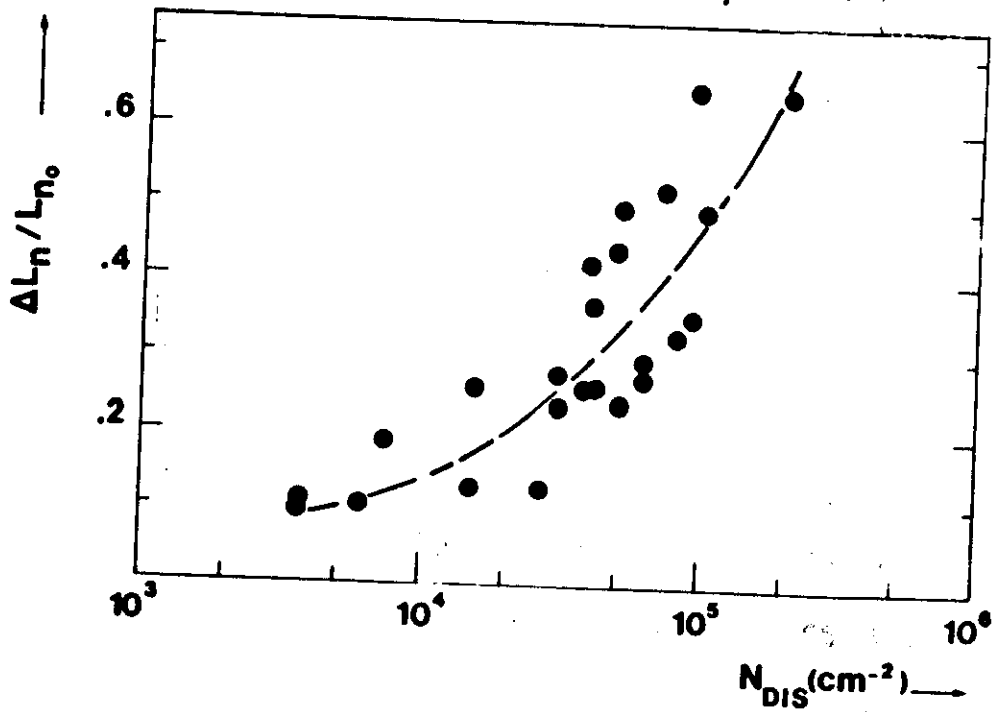


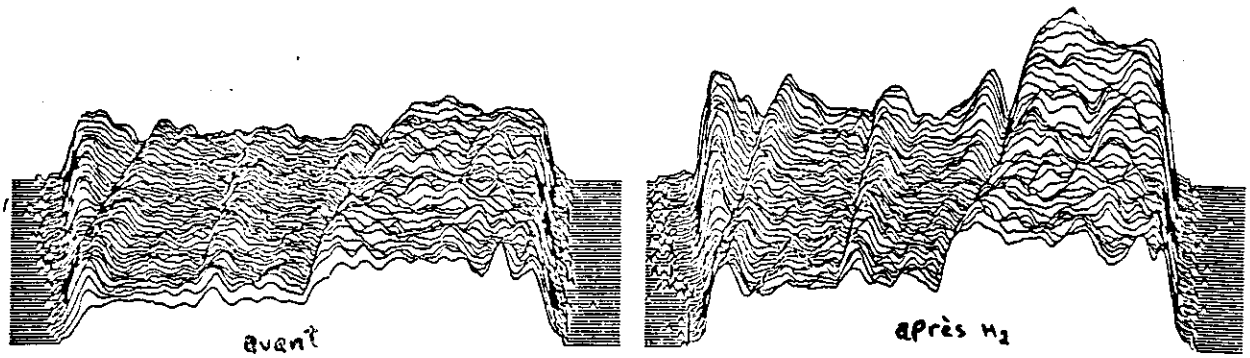
Schéma synoptique du système de balayage photoélectrique, servant aussi pour la mesure de la longueur de diffusion.

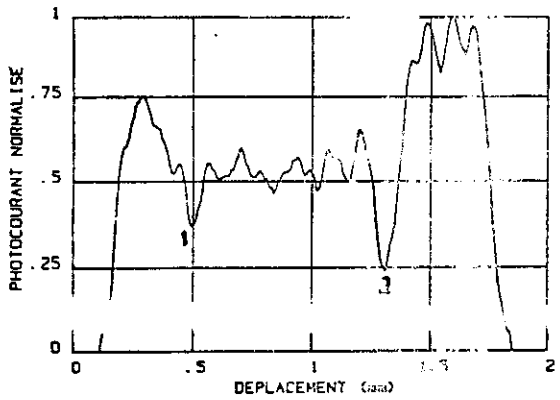

ΔLn/Ln
.6
.5
.4
.3
.2
.1
250
300
350
400
T (°c)


ΔLn/Ln(%)
40
20
20
30
40
Lj(cm/cm²)


ΔLn/Ln
.6
.4
.2
2
4
6
8
10
t (h)

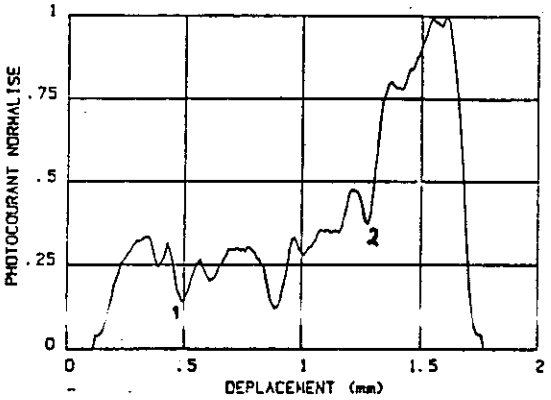

ΔLn/Lno
.6
.4
.2
10³
10⁴
10⁵
10⁶
NDIS(cm⁻²)





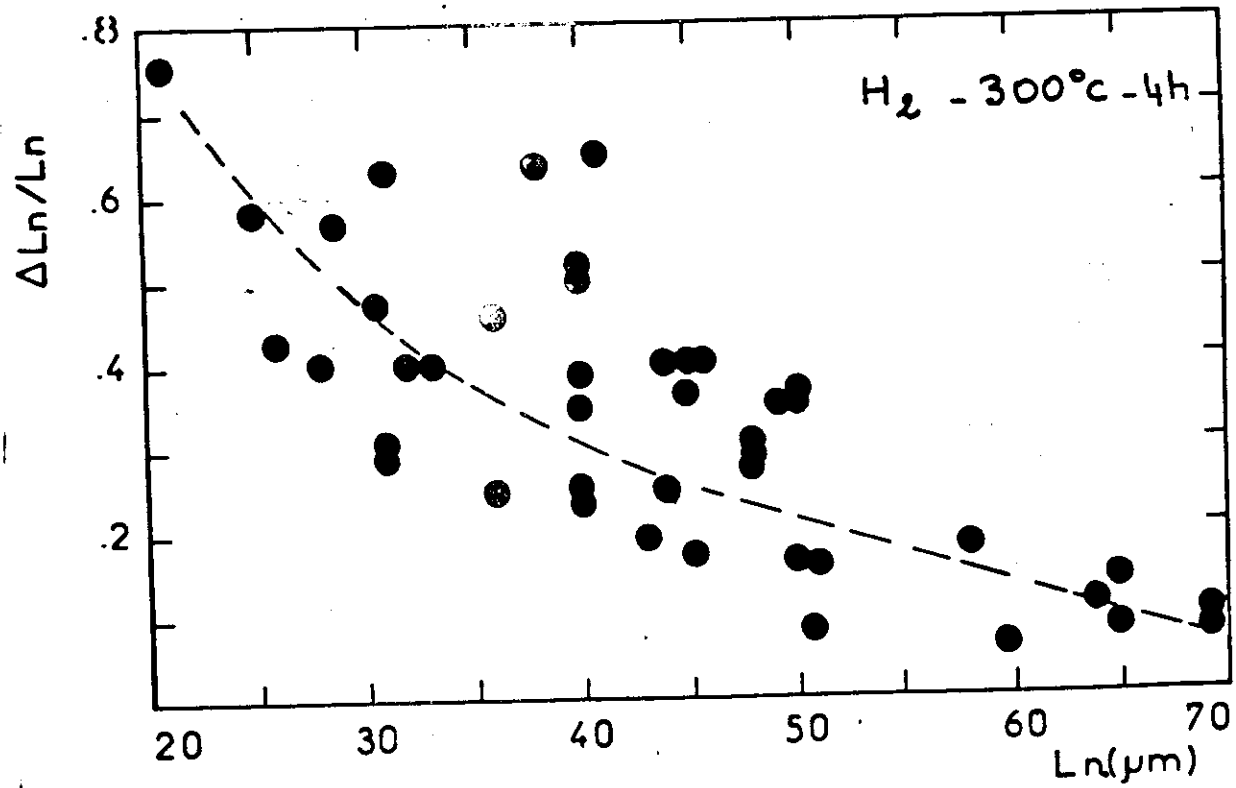
$S_1 = 8,9\ 10^{4}$ cm/sec $L_1 = 3,03\ \mu$

$S_2 = 2,6\ 10^{5}$ "



$S_1 = 2,1\ 10^{4}$ $L_1 = 35,6\ \mu$

$S_2 = 6,7\ 10^{4}$

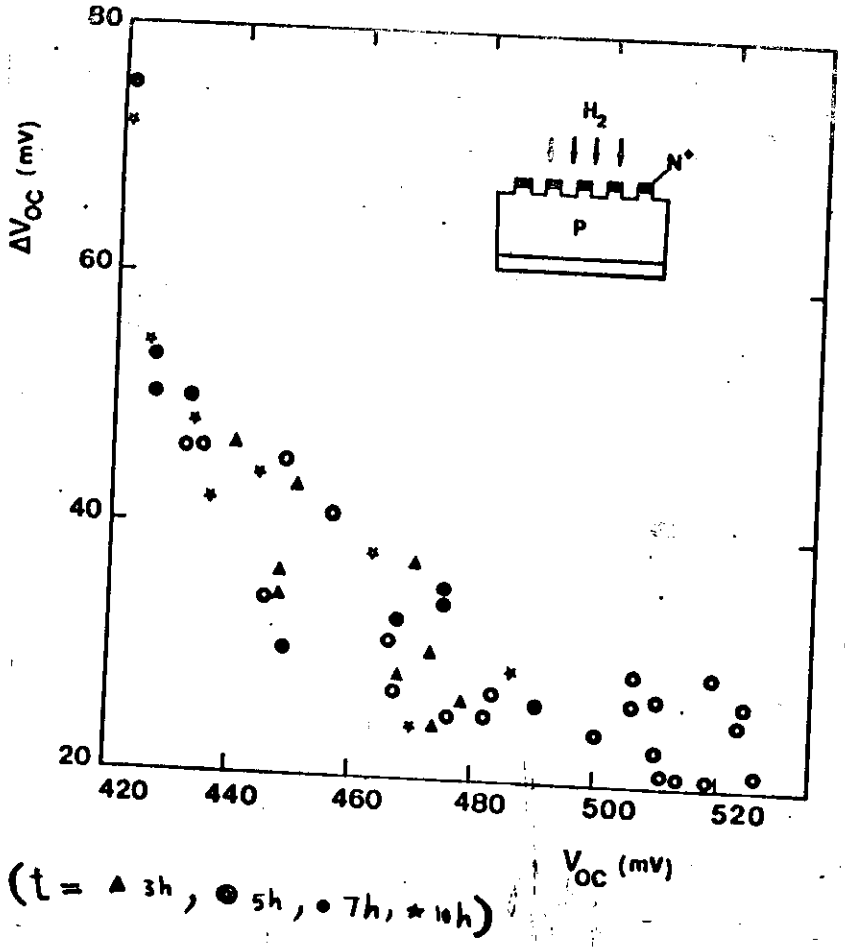


$$V_{co} = m V_t \ln \frac{I_{cc}}{I_o} \longrightarrow ①$$

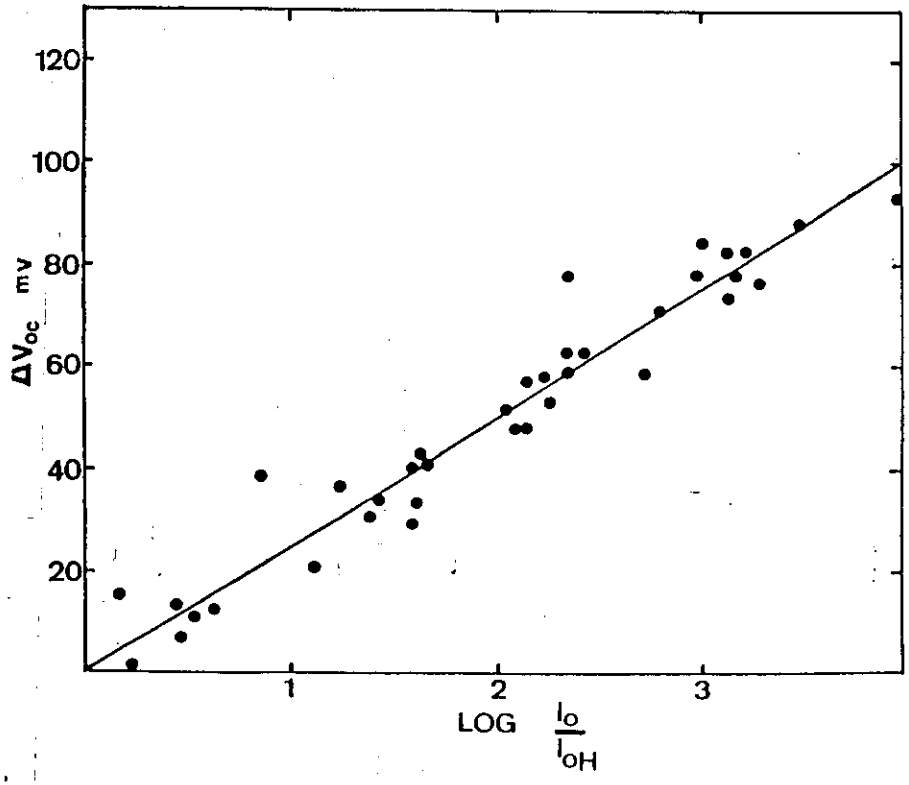
$$V_{coH} = m_H V_t \ln \frac{I_{ccH}}{I_{oH}} \longrightarrow ②$$

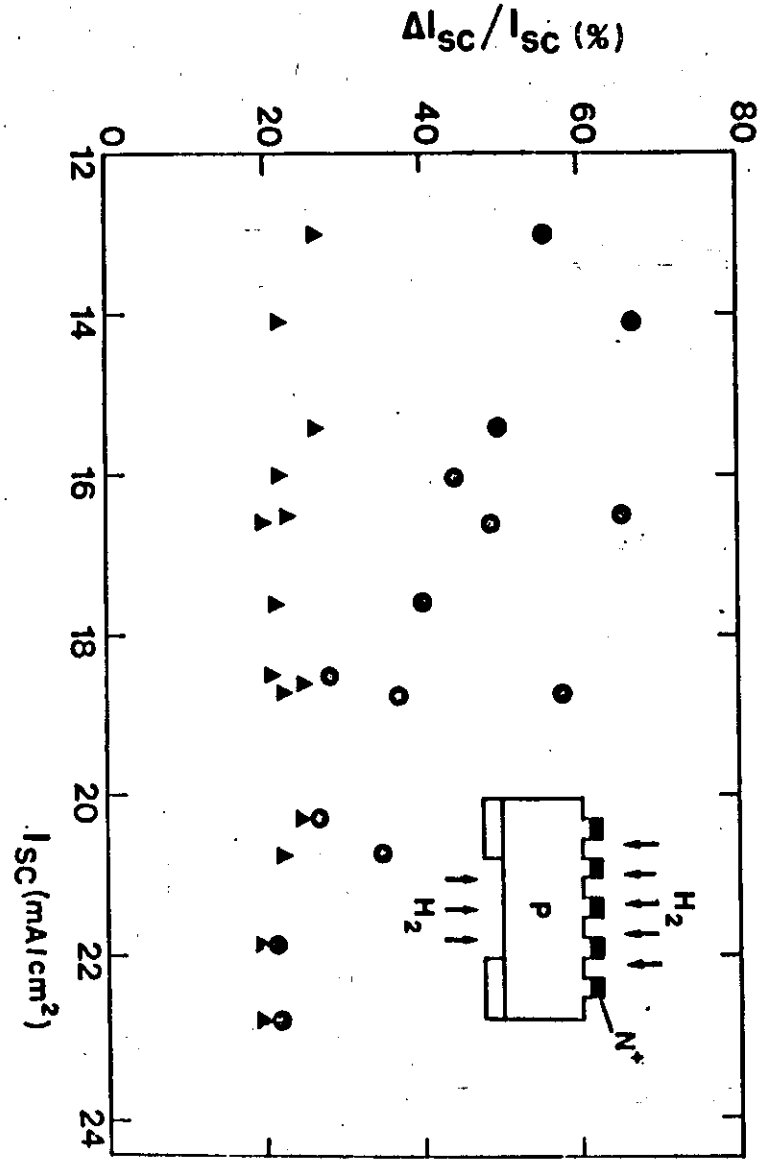
$$\Delta V_{co} = \frac{V_{coH}}{m_H} - \frac{V_{co}}{m} = V_t \ln \left(\frac{I_o}{I_{oH}} \cdot \frac{I_{ccH}}{I_{cc}} \right)$$

$$\Delta V_{co} \simeq V_t \ln \frac{I_o}{I_{oH}} \longrightarrow ③$$



(t = ▲ 3h, ● 5h, • 7h, ★ 10h)





éch.	$\overline{V_{co}}$	$\overline{V_{coH}}$	ΔV_{co}
1	491	521	30
2	475	503	28
3	451	503	52
4	475	548	73

éch.	$\overline{V_d}$	$\overline{V_{dH}}$	ΔV_d
1	,851	,954	0,103
2	,854	,954	0,1
3	,855	1,001	0,146
4	,85	1,004	0,154

$$V_d = E_g/2q + \frac{kT}{q} \ln \frac{N_a - n_t}{n_i}$$