

(Dibenzo-24-Crown-8)

/ /

(NJC)

(تاريخ القبول 2008/ 4 /24)

(تاريخ الاستلام 2008/ 3/ 3)

الخلاصة

Dibenzo-24-

Di-n-) (DOPP)

(PVC) (Poly Vinyl Chloride)

(DB24C8) (Crown-8

. (Octyl Phenyl Phthalate

/ (5×10^{-5} - 7×10^{-5})

(0.9997) (r)

/ ($8 \times 10^{-2.5}$)

(27.51 mV/decade)

.(-2.5, 97.5)

(E_{rel.} R_e %)

(RSD % = 1.4 %)

(0.9994)

(R²)(1x10⁻³)

(7-5)

(20°C)

,(pH=6)

(7)

(55-35)

(K_{i,j}^{pot})**Abstract**

The aim of this study including prepare a new selective electrode of Palladium (II) ion by dependent on the crown ether (Dibenzo-24-Crown-8) as a sensor deposited in (PVC), the plasticizer material in the membrane was Di-n-Octyl Phenyl Phthalate (DOPP).

This electrode gave a linear activity in the range of (5×10^{-7} - 5×10^{-3}) mol/l with activity unit (27.51 mV/decade) and detection limit was (2.5×10^{-8}) mol/l with correlation factor (r) 0.9997, linearity (R²) 0.9994, R.S.D % (1.4) % and (E_{rel.} R_e) % were (-2.5, 97.5) %.

Factors effect on the nernst response of it is prepared electrode were studied, such as pH, concentration of internal filling solution, temperature, time response of the electrode, life time and the selectivity coefficient (K_{i,j}^{pot}) determined in the presence anionic and cationic ions

The best concentration of the internal filling solution was (1x10⁻³) mol/l, the acidity function (pH) between (5-7) and the best nernst response at (pH=6), temperature was 20°C, response time was between 35-55 sec., the life time of Pd-electrode was 7 days.

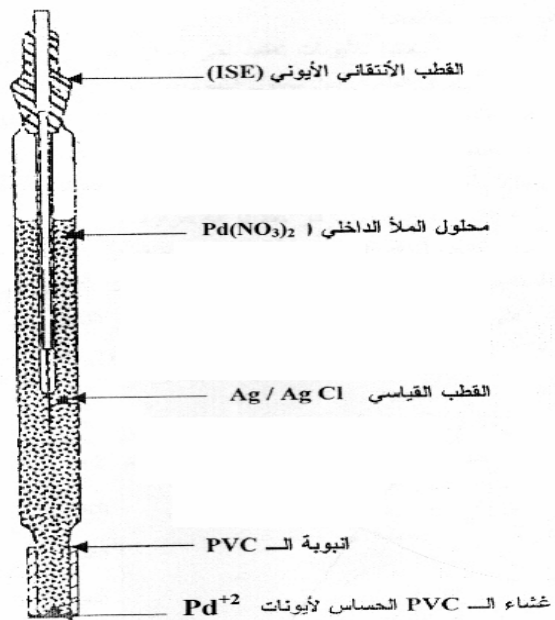
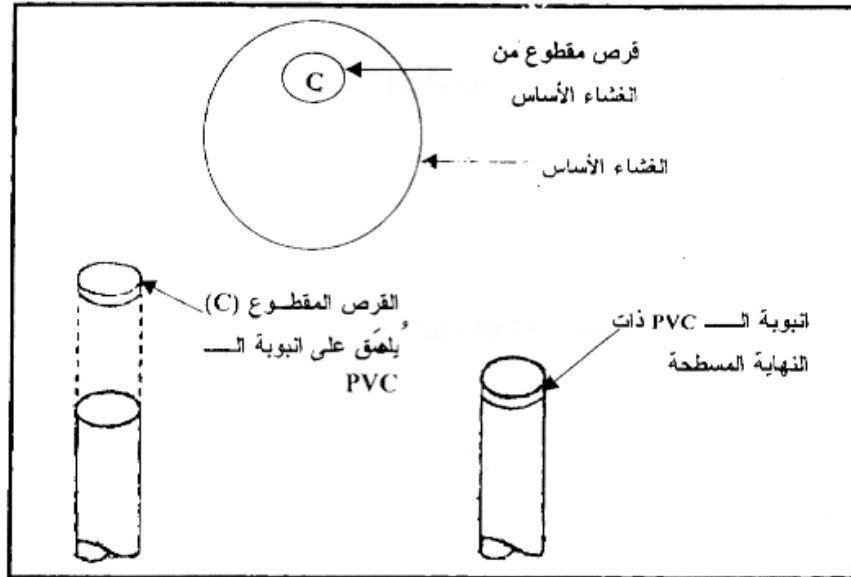
		المقدمة
(¹⁰)PDB18C6	(Jalhoom)	Ion-) (ISE _s)
(Cs ⁺ , Rb ⁺ , K ⁺ , Na ⁺ , Li ⁺)		(selective electrodes
AL-) , (¹¹)DB18C6	(Kuramy	Wilhmost-)
		1890 (Ostwald
, (¹²)DB24C8 DB18C6	(Ali)	
Hexathia-18-crown-6-)		
(PVC)	(tetraone	
, (¹³)DOPH, DBPH		(Reference electrodes)
(Th (I))		(1-3).
(Dibenzylidiaz-18-Crown-6)		
o-) (PVC)		pH
	(¹⁴)NPOE	1900
	(¹⁵)	(^{4,5}). (K ⁺ , Li ⁺ , Na ⁺)
		1960
	(Pd ²⁺)	(⁶) (Pederson)
(PVC)	(DB24C8)	
(Di-n-Octyl Phenyl Phthalat)		(Crown Ethers)
	(DOPP)	Aza Crown)
		(Ethers
		Thia Crown)
		(Ethers
(pH)	-1	
(E mV)		
pH-meter Kink-Digital (pH-meter),		(⁷⁻⁹). (Aza Thia Crown Ethers)
England.		
	-2	
Calomel reference electrode,		(Al-Sharify)
Gallinkamamp, USA.		
	-3	
Silver-silver chloride electrode		

				-4
(72)			IE-Hpectrod, Orionresearch-USA.	
				-5
			Magnetic stirrer, Gallinkamp, USA.	
				-6
(12)			Sensitive balance, Sortoris, Germany.	
				-7
			Water Bath, Gesellschaft Fur Labortechnik (Germany).	
			(Aldrich) (Fluka) (Merck)	
(25)			/ 0.1) (II) -1	
			(
			1.1520	
			Pd(NO ₃) ₂	
			/ (0.001)	
(THF)	(PVC)		50	-2
			/ 0.5	
			(Cork Borer)	
			(PVC)	
			(Ag/AgCl)	
			50	
			(16-18)	
(1)	(PVC)		Pd(NO ₃) ₂ (0.005)	
			(0.25) (DB18C6) (0.003)	
			(DOPP)	
			(PVC) (0.17)	
			(THF)	
			(8-7)	
			/ (0.001)	

(2)

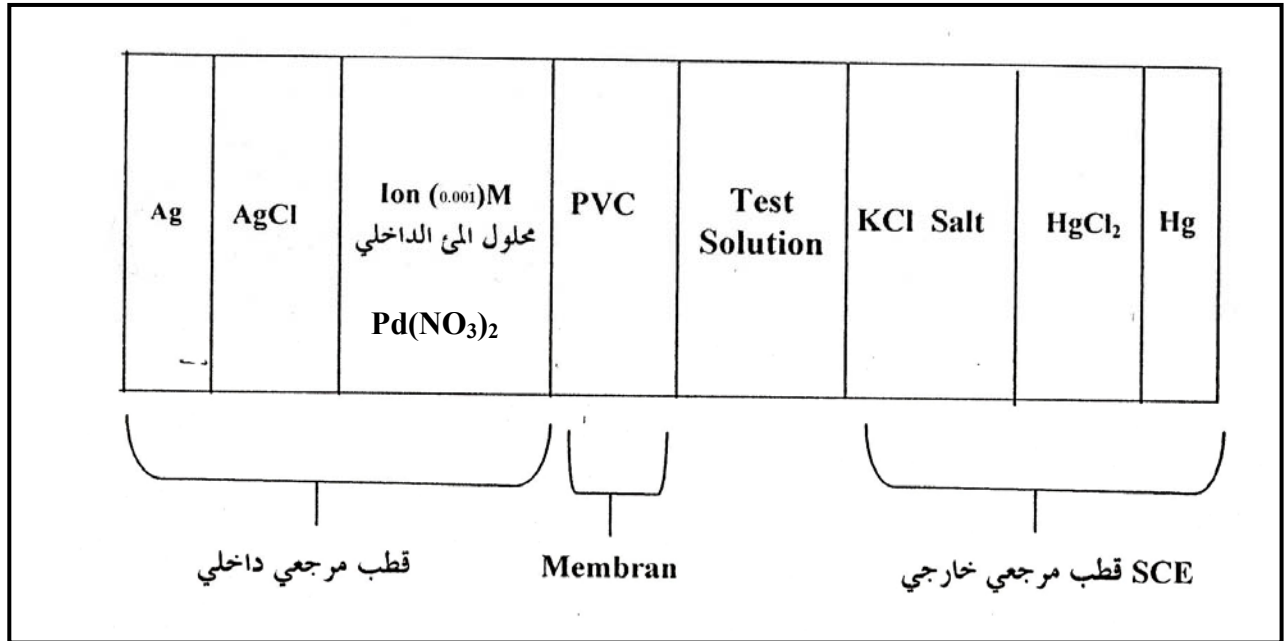
(II)

(19)



(II)

(2)

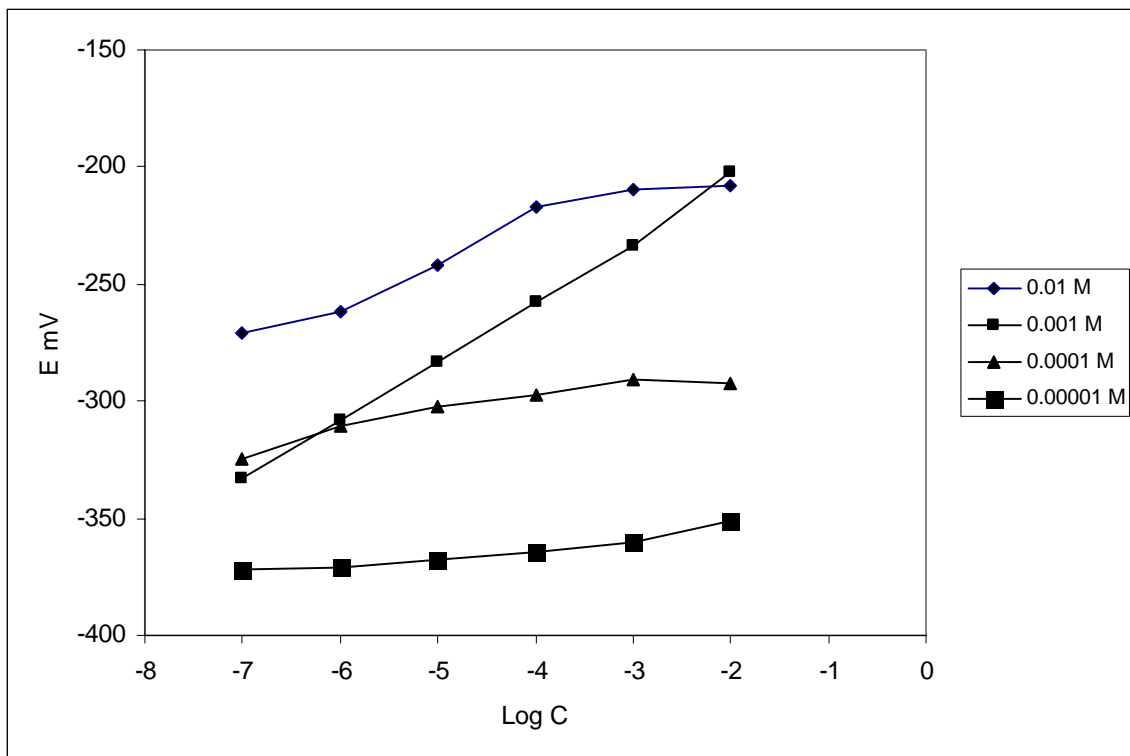


(3)

(E mV) $(NO_3)_2$

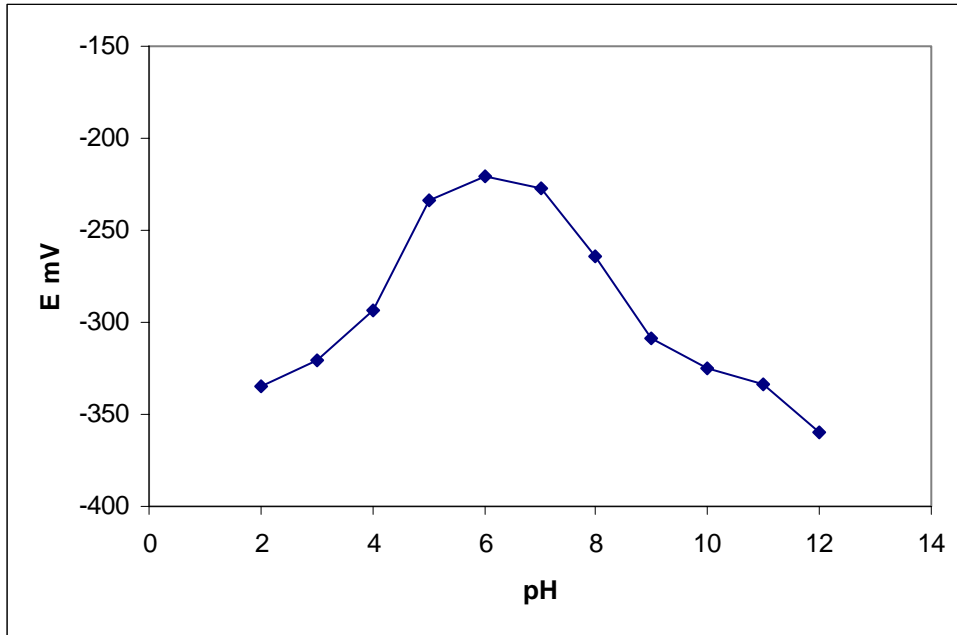
(4)

Pd / $(10^{-5}-10^{-2})$



(4)

(4)
 / (1×10^{-3})
 (pH = 1-11) (27.51
 HCl mV/decade)
 / (0.1) (NaOH)
 . (5) (pH)

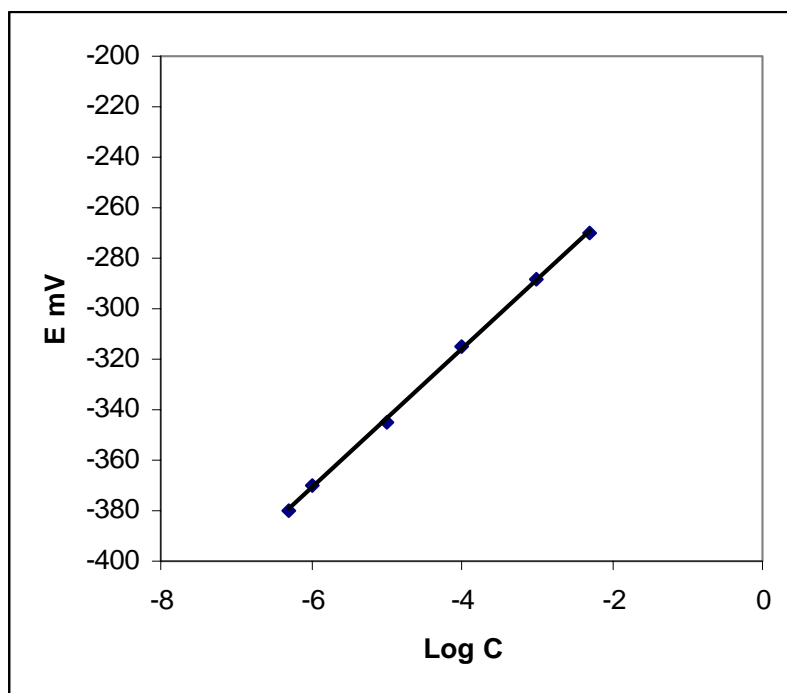


(5)

(5)
 (pH=5-7)
 (5-40 °c) . (pH=6)

(21) (20°c) (pH= 7)
 _____ (Pd (OH)₂)
 pH=) (5)
 (7) (H₃O⁺)
 (14) (20) _____

$$\begin{aligned}
 & \text{(Log [Pd}^{2+}\text{])} \quad \text{(E mV)} \\
 & / \quad (5 \times 10^{-7} - 5 \times 10^{-3}) \\
 & (r) \quad (27.51 \text{ mV/decade}) \quad (55-35) \\
 & (0.9994) \quad (R^2) \quad (0.9997) \quad \text{(II)} \\
 & \text{RSD) } / \quad (2.5 \times 10^{-8}) \\
 & (E_{\text{rel. R}_e} \%) \quad (\% = 1.4 \%) \quad (20) \\
 & \quad (\text{pH}=6) \quad (-2.5, 97.5) \\
 & \quad \quad \quad (20^\circ\text{c}) \\
 & (6) \quad / \quad (1 \times 10^{-3})
 \end{aligned}$$



(6)

$$E = E^\circ + \frac{2.303 RT}{Z_i F} \log (a_i + \sum_j K_{ij} \frac{a_j}{Z_j})$$

$$\begin{aligned}
 & (j) \quad (\text{Pd}^{2+}) \quad (i) \\
 & (\text{Pd}^{2+}) \quad (Z_i) \quad (Z_j) \quad / \quad (0.1) \quad \text{(II)} \\
 & (K_{ij}^{\text{pot}}) \quad (1) \quad / \quad (1 \times 10^{-4}) \quad (K_{ij}^{\text{pot}}) \\
 & \quad \quad \quad (22)
 \end{aligned}$$

(1) (K_{ij}^{pot})

$K_{i,j}^{pot} \times 10^{-6}$	الايون المتداخل
-18.3	Li^+
-20.40	Na^+
-48.10	K^+
-65.70	Rb^+
-11.10	Mg^{2+}
-12.40	Ca^{2+}
-7.60	Sr^{2+}
-10.01	Ba^{2+}
-15.40	Ni^{2+}
-6.80	Cd^{2+}
-17.90	Cu^{2+}
-2.20	Fe^{3+}
-2.80	Al^{3+}
-4.10	$(COO)^{2-}$
-1.45	F^-
-6.72	SO_3^{2-}
-11.40	HPO_4^-
-13.80	HCO_3^-
-6.04	Cl^-
-8.28	NO_3^-

(1)

(II) (II) (II)

 (K_{ij}^{pot}) (10^{-3})

(2)

(2)

الطريقة الطيفية ⁽²³⁾	الطريقة المجهادية	تركيز ايون البلاديوم (II) المحضر (مول/لتر)
1.895×10^{-4}	1.961×10^{-4}	2×10^{-4}
2.114×10^{-5}	2.247×10^{-5}	2.5×10^{-5}
2.748	2.464	RSD%
2.14	2.77	RE%

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(3)

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