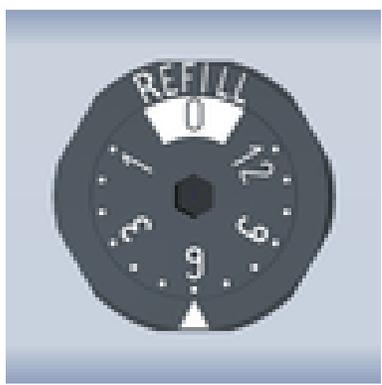


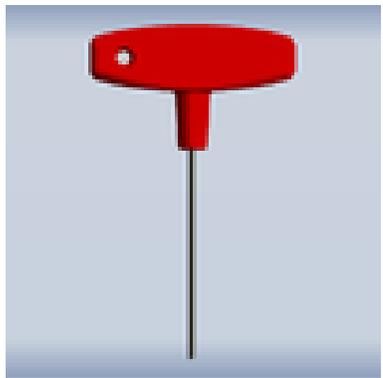
HydroFlex® 完整包



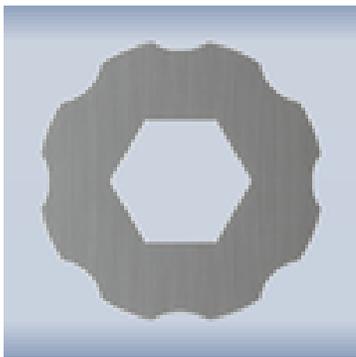
氢参比电极



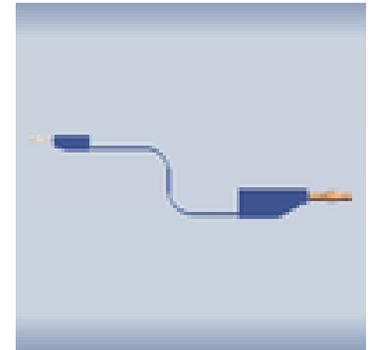
氢气缓释盒



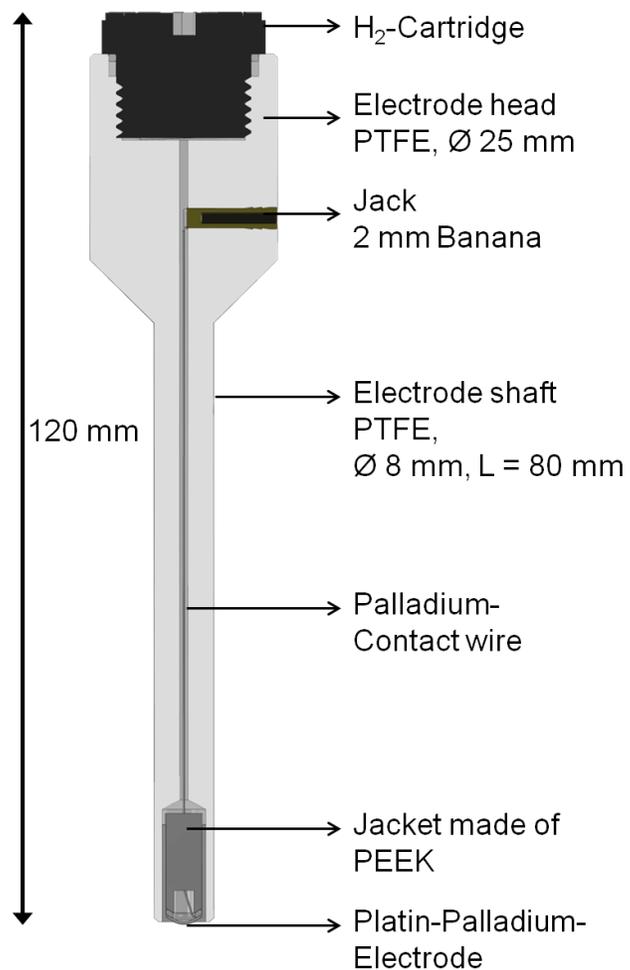
操作扳手



套筒扳手



连接线



Hydroflex® 直接测量有机和无机电解质中的电化学电位

Hydroflex® 在整个酸碱度范围内工作, pH2~16

Hydroflex® 在含氟电解质中永久运行, 即使在非常高的浓度下

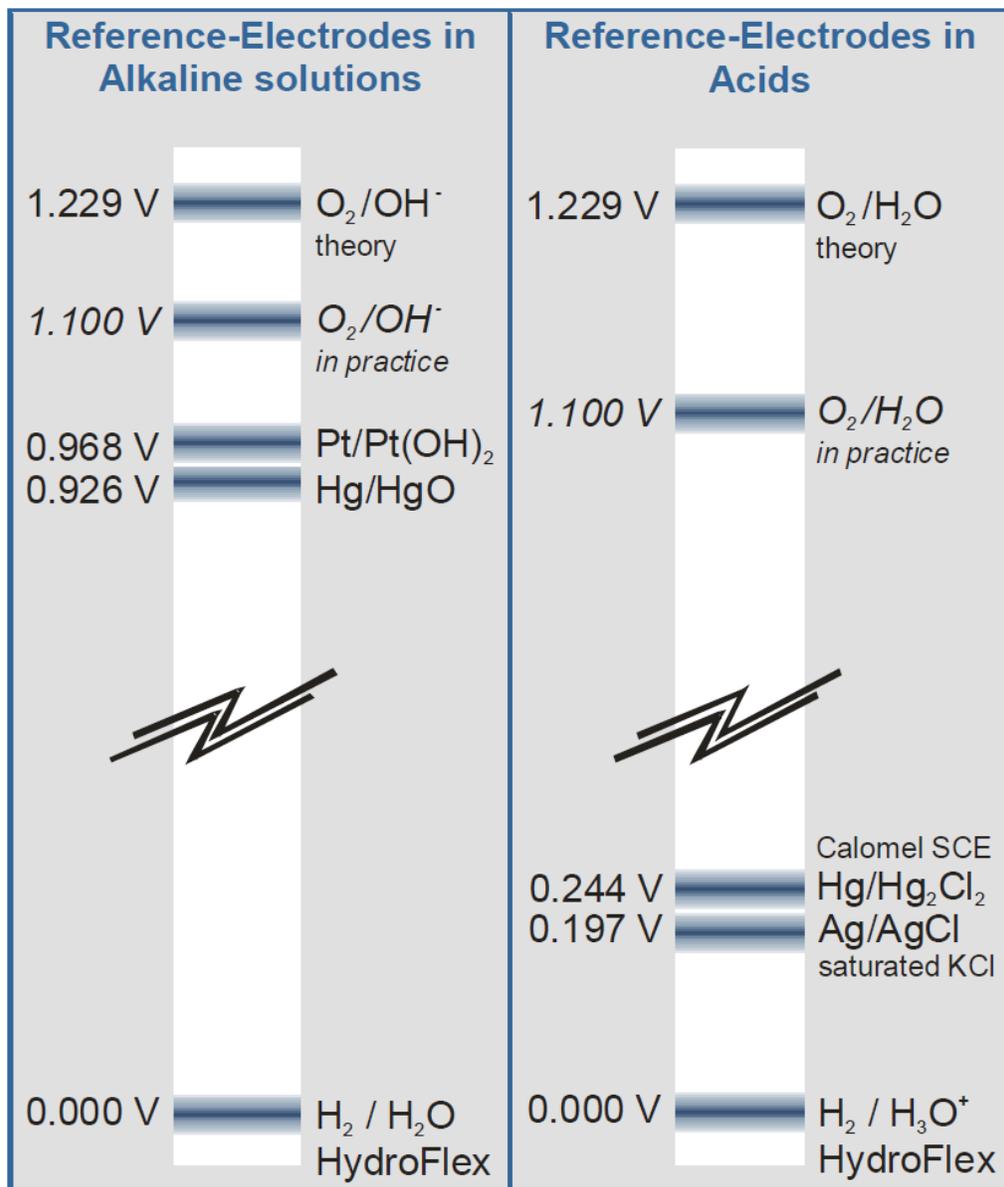
Hydroflex® 在高达210°C的液体中工作

Hydroflex® 在高达10 bar压力下工作

Hydroflex® 也可与盐桥一起使用, 例如在正常氢电极中工作, 或防止铂催化剂中毒

Hydroflex® 需要一个只有5M欧输入阻抗 (或更高) 的电压表

Hydroflex® 不需要内电解质, 没有离子浓度差和扩散电位差



- ✓ LiOH lithium hydroxide
 - ✓ NaOH sodium hydroxide (caustic soda)
 - ✓ KOH potassium hydroxide (caustic potash)
 - ✓ HCl hydrochloric acid
 - ✓ NaCl sodium chloride (common salt solution)
 - ✓ KCl potassium chloride
 - ✓ H₂SO₄ sulfuric acid (< 50%)
 - ✓ H₃PO₄ phosphoric acid (bis 85%)
 - ✓ HF hydrofluoric acid
 - ✓ HClO hypochlorous acid
 - ✓ HClO₄ perchloric acid
 - ✓ H₂CO₃ carbonic acid
 - ✓ HCOOH formic acid (methane acid)
 - ✓ (CH₃)₃COOH acetic acid (ethane acid)
 - ✓ C₆H₅COOH benzoic acid
 - ✓ C₃H₆O₃ lactic acid (2-Hydroxypropanoic acid)
 - ✓ C₆H₈O₇ citric acid (2-hydroxy-1,2,3-propanetricarboxylic acid)
-
- HNO₃ nitric acid > 2 mol/l
 - HNO₃ / HCl nitrohydrochloric acid (aqua regia)
 - (CH)₂(COOH)₂ maleic acid (*cis*-butenedioic acid)



1、将电极尾部的保护帽取下



24h

2、用操作扳手将氢缓释盒调节到1的位置后，将氢参比电极放入纯水中浸润24小时

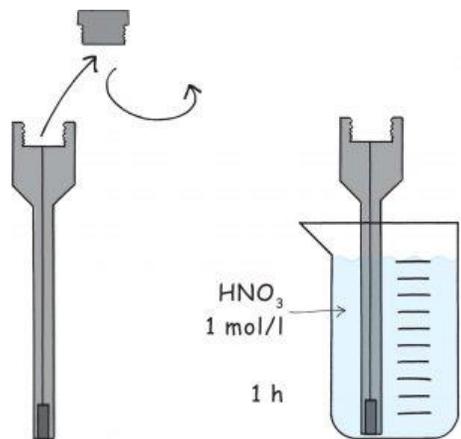


3、用标签标记开始启用的日期

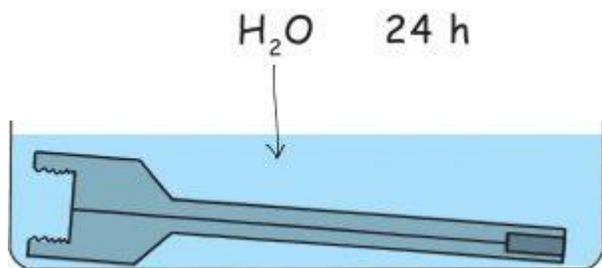


4、24小时候再用操作扳手将氢缓释盒调节到6的位置后，就可以正常使用

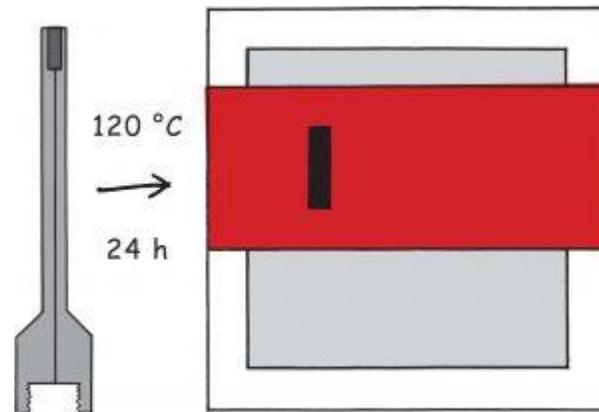
现象	潜在原因	改正
电位错误	● 不良接触	<input checked="" type="checkbox"/> 检查测试头 <input checked="" type="checkbox"/> 检查参比电极
	● 离子交换速度缓慢	<input checked="" type="checkbox"/> 1m HCl中检查
	● 没有氢或者混入了空气	<input checked="" type="checkbox"/> 检查并更换新的储氢盒
电极上出现沉积物	● 氢气量减少 ● 电解液有杂志	<input checked="" type="checkbox"/> 清水冲洗 <input checked="" type="checkbox"/> 清洗参比电极



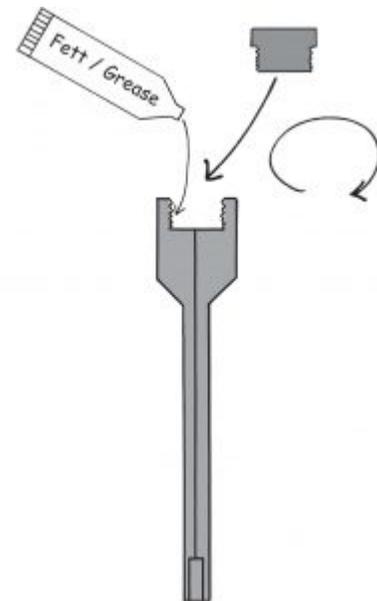
1、取下储氢盒，将电极在 1 mol/l 的硝酸中浸泡 1小时



2、将电极在纯水中浸泡 24小时



3、将电极在120° C烘干 24小时



4、重新装回新的储氢盒

$$\text{pH} = -\text{Log} [\text{H}^+]$$

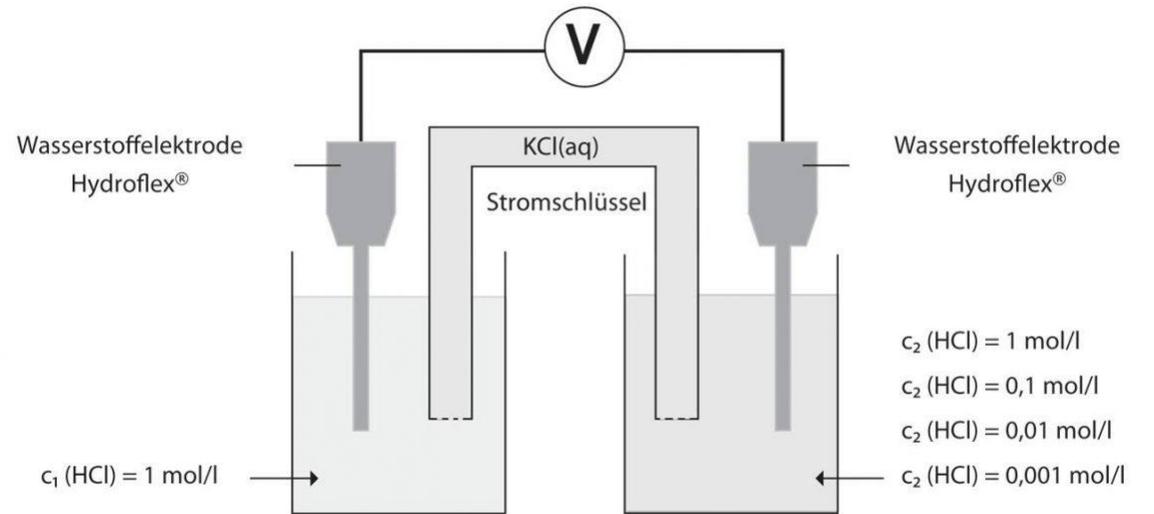
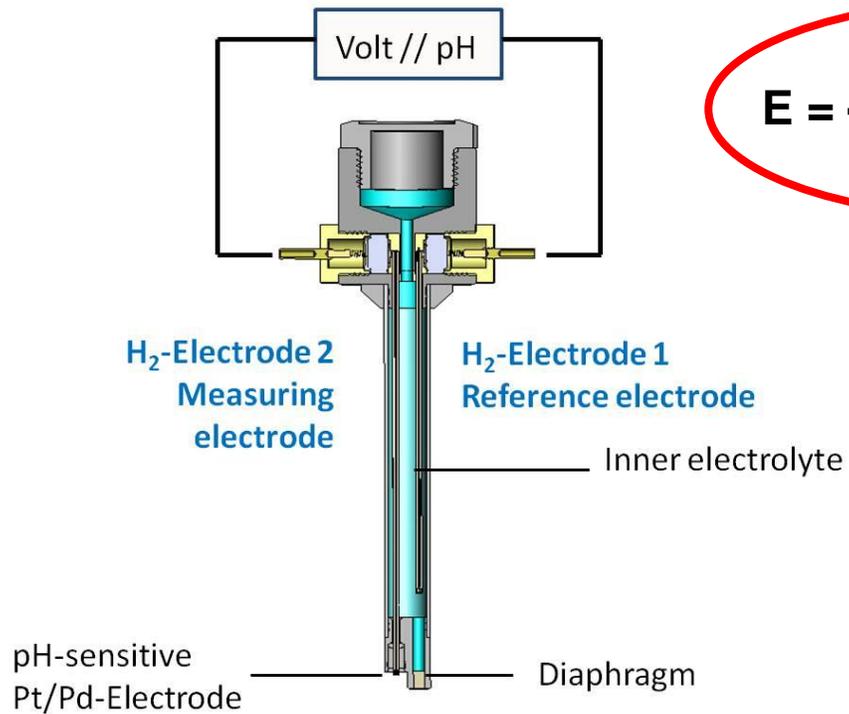
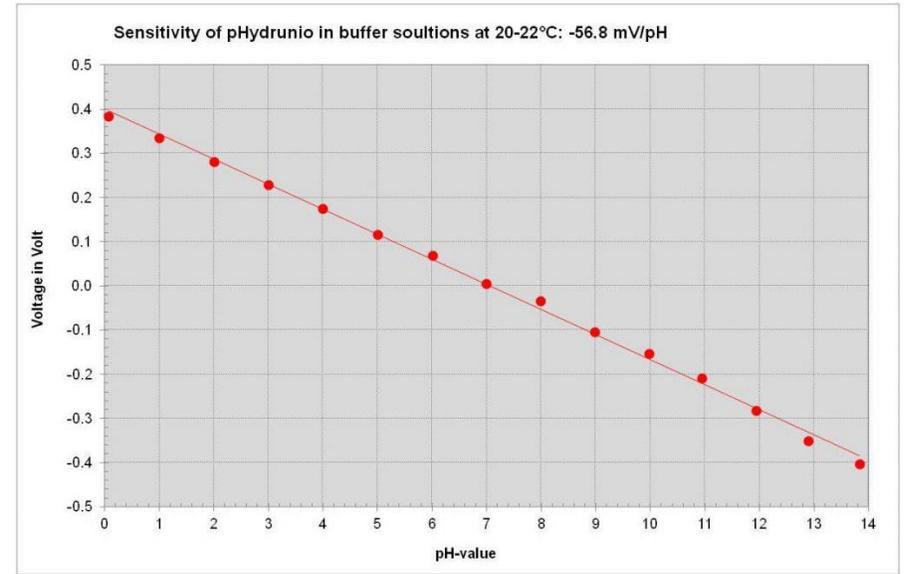


$$E = E^0 + \frac{RT}{zF} \text{Ln} [\text{H}^+]$$

$$E^0 = 0 \text{ V für } \text{H}_2/\text{H}^+$$

$$\Delta E = 2.303 \frac{RT}{zF} \text{pH}$$

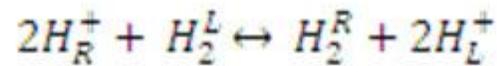
$$E = -0.059 \text{ pH (25°C)}$$



$$E = -0.059 \text{ pH (25°C)}$$

Berechnung des Potentials nach der Konvention $E = E_R - E_L$

$$E_R = E_R^{00} + \frac{RT}{2F} \ln \left[\frac{2H_R^+}{H_2^R} \right] \quad E_L = E_L^{00} + \frac{RT}{2F} \ln \left[\frac{2H_L^+}{H_2^L} \right]$$



$$E = E_R^{00} - E_L^{00} + \frac{RT}{2F} \ln \left[\frac{2H_R^+ H_2^L}{2H_L^+ H_2^R} \right]$$

$$H_L^+ = 1.0 \text{ mol L}^{-1} \quad E_R^{00} = E_L^{00} = 0.0 \text{ Volt} \quad H_2^R = H_2^L = 1.0 \text{ bar}$$

$$E = +\frac{RT}{2F} \ln[2H_R^+] = +\frac{RT}{F} \ln[H_R^+] = \frac{2.303 RT}{F} \log[H_R^+]$$

$$F = 96485 \text{ C mol}^{-1} \quad R = 8.314 \text{ J mol}^{-1} \text{ K}^{-1} \quad T = 298.15 \text{ K}$$

$$E = 0.059 \log[H_R^+]$$

$$H_R^+ = 0.1 \text{ mol L}^{-1}$$

$$E = -0.059 \text{ Volt}$$