

ELCHEM

ECchoose: choose electrochemical reaction (0.1s)	<div> <div> <div>el.chem. reaction: V</div> <div> Ag⁺+e⁻→Ag: .7996 Ag²⁺+e⁻→Ag⁺: 1.38 AgBr+e⁻→Ag+Br⁻: .0713 AgBrO₃+e⁻→Ag+BrO₃⁻: Ag₂C₂O₄+2e⁻→2Ag+C₂O₄²⁻ AgCl+e⁻→Ag+Cl⁻: .2223 AgCN+e⁻→Ag+CN⁻: -.017 Ag₂CO₃+2e⁻→2Ag+CO₃²⁻: </div> </div> <div>CANCEL OK</div> </div>	<div> <div>RAD XYZ DEC R= 'R'</div> <div>CHOME ELCHEM? USR</div> </div> <div> <div>"Ag⁺+e⁻→Ag"</div> <div>.7996_V</div> </div> <div>ECcho REOch R+ceq Vecho +Ve Cexno</div>
ECchoose: choose electrochemical reaction (0.1s)	<div> <div>el.chem. reaction: V</div> <div> ZnO₂²⁻+2H₂O+2e⁻→2n+4O ZnOH⁺+H⁺+2e⁻→Zn+H₂O: Zn(OH)₄²⁻+2e⁻→Zn+4OH⁻ Zn(OH)₂+2e⁻→Zn+2OH⁻: ZnO+H₂O+2e⁻→Zn+2OH⁻: ZrO₂+4H⁺+4e⁻→Zr+2H₂O: ZrO(OH)₂+H₂O+4e⁻→Zr+4 Zr⁴⁺+4e⁻→Zr: -1.45 </div> </div> <div>CANCEL OK</div>	<div> <div>"ZrO₂+4H⁺+4e⁻→Zr+2...</div> <div>-1.553_V</div> </div> <div>ECcho REOch R+ceq Vecho +Ve Cexno</div>
REQchoose: choose redox equation (0.1s)	<div> <div>select redox equation</div> <div> Lead-acid: { "Pb+HSO₄ Li-ion: { "LiCoO₂+CoO Ni-MH(N=Co...): { "CoH Ni-Cd: { "Cd+2OH⁻→CdO Alcaline: { "Zn+2OH⁻→ Ag-O: { "Zn+2OH⁻→ZnO+ Zn-carbon: { "Zn+2n₂+ Daniell: { "Zn+2n₂+2 </div> </div> <div>CANCEL OK</div>	<div> <div>Li-ion: { "LiCoO₂+CoO+Li⁺+e⁻"</div> <div>"Li⁺+e⁻+6C+LiC"</div> <div>"Cd+2OH⁻→CdO+2H₂O"</div> <div>Ni-Cd: { "2NiOOH+2H₂O+2e⁻→2NiO₂</div> <div>"Zn+2OH⁻→ZnO+H₂O"</div> <div>Alcaline: { "2MnO₂+H₂O+2e⁻→Mn₂O₃</div> </div> <div>ECcho REOch R+ceq Vecho +Ve Cexno</div>
R→ceq: redox to chemical equation (3s)	<div> <div>"LiCoO₂+6C→CoO₂+Li...</div> <div>"2NiOOH+2H₂O+Cd→Cd...</div> <div>"2MnO₂+Zn→Mn₂O₃+Zn...</div> </div> <div>ECcho REOch R+ceq Vecho +Ve Cexno</div>	<div> <div>{ "Pb+HSO₄⁻→H₂O+PbSO₄+H₃O⁺+2</div> <div>"PbO₂+HSO₄⁻→3H₃O⁺+2e⁻+PbSO₄+</div> </div> <div>ECcho REOch R+ceq Vecho +Ve Cexno</div>
Example lead-acid eqn		
Vechoose: select electrochemical potential of element (0.5s)	<div> <div>select element: Ve</div> <div> Veaq: .8_V Vea1: -1.66_V Vea5: .23_V Vea9: 1.4_V Vea9: -2.91_V Vea9: -1.85_V Vea9: .31_V Vea9: 1.07_V </div> </div> <div>CANCEL OK</div>	<div> <div>select element: Ve</div> <div> Vea9: .02_V Vea9: -2.9_V Vea9: -.6_V Vea9: -1.14_V Vea9: -.34_V Vea9: -1.8_V Vea9: .1_V Vea9: -.76_V </div> </div> <div>CANCEL OK</div>
→Ve: electro chemical potential of Ag (0.1s)	<div> <div>"VeAg"</div> <div>VeAg: (.8_V)</div> </div> <div>ECcho REOch R+ceq Vecho +Ve Cexno</div>	<div> <div>"VeFe"</div> <div>VeFe: (-.04_V)</div> </div> <div>REE CEQ R+ceq REcho LREQ +Ve</div>
→Ve: electro chemical potential of Fe (0.1s)		
Cexmol: electrochemical equation to molecules	<div> <div>"2MnO₂+2H₂O+2e⁻→2M...</div> <div>{2 "MnO₂" 2 "H₂O" 2 "e⁻"}</div> <div>{2 "MnOOH" 2 "OH⁻"}</div> </div> <div>ECcho REOch R+ceq Vecho +Ve Cexno</div>	<div> <div>math equations for el. chem.</div> <div> H mass(g) (shall) M molar mass(g/mol) z, z12 valence1 I el. current(A) t time(s) n1, z mlnumber (mol) Ve, 0 el.chem. volt(V) T temperature(K) R equilbr. const() Fc, R Faraday, gas const </div> </div> <div>GRAPH CANCEL OK</div>
electrochemical variables		
equations	<div> <div> $n = \frac{M}{z \cdot Fc} \cdot I \cdot t$ $\frac{n_1}{n_2} = \frac{z_2}{z_1}$ $Ve = Ve0 + \frac{R \cdot T}{z \cdot Fc} \cdot \ln(K)$ $Ve = Ve0 + \frac{.053 \cdot V}{z} \cdot \log(K)$ </div> </div> <div>Molet Lech Lreq Lve Lve0 Elche</div>	<div> <div> $n = 0.3$ $M = 0. \frac{g}{mol}$ $n1 = 0. mol$ $I = 0. A$ $t = 0. s$ $Ve = 0. V$ $T = 0. K$ </div> </div> <div>EDIT VIEW STACK RCL PURGE/CLEAR</div>
units		