

LABORATORIUM KIMIA FISIKA

Departemen Kimia - FMIPA

Universitas Gadjah Mada (UGM)

ELEKTROKIMIA

Informasi Kuliah

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INFORMASI KULIAH

Judul kuliah	: Elektrokimia
Kode	: MKK 3301
SKS	: 2 SKS
Sifat	: Wajib
Prasyarat	: MKK 2301-Kimia Fisik 1
Kelas	: A-B-C
Jadwal	: A. Jumat, jam 09:30 s.d. 11:10 di S1.105 B. Senin, jam 16:30 s.d. 18:10 di S1.203 C. Senin, jam 13:30 s.d. 15:10 di S1.302
Dosen	: Drs. Iqmal Tahir, M.Si. Dr. Akhmad Syoufiyan Prof. Dr. Wega Trisunaryanti Dr. Ria Armunanto, M.Si.
USIP	:
UAS	:



ELEKTROKIMIA

Ilmu Kimia :

kajian ilmu yang mempelajari komposisi, struktur, dan sifat materi serta perubahan yang menyertainya.

Elektrokimia ?

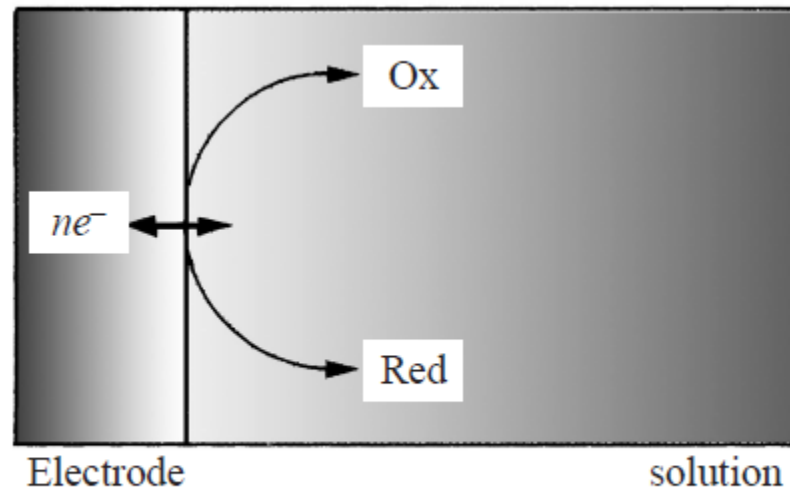


Fig. 2.1 Redox reaction at a metal electrode in a solution containing a redox couple.





Electricity + Chemistry

Elektrokimia adalah cabang ilmu kimia fisik yang mempelajari reaksi kimia yang berlangsung pada :

- antarmuka dari elektroda, seperti padat logam atau semikonduktor,
- konduktor ionik berupa larutan elektrolit.

Reaksi ini melibatkan muatan listrik yang bergerak antara elektroda dan elektrolit (ion atau spesies dalam larutan).

Jadi pengertian elektrokimia berkaitan dengan kajian interaksi antara energi listrik dan perubahan kimia.



Pelaksanaan Kuliah Elektrokimia

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2.	Prediksi dan pentingnya potensial sel	4	AS
3.	Persamaan Nernst	4	
4.	Baterai dan sel bahan bakar	4	WT
5.	elektrokimia korosi	2	
6.	sel elektrolit	4	RA
7.	Aplikasi sel elektrokimia dalam sel biologi	4	

UTS

A: Jumat 9.30-11.00 di S1.307

C: Senin 13.30 – 15.10 di S1.302

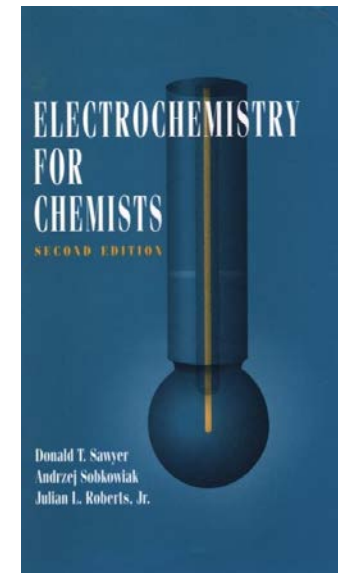
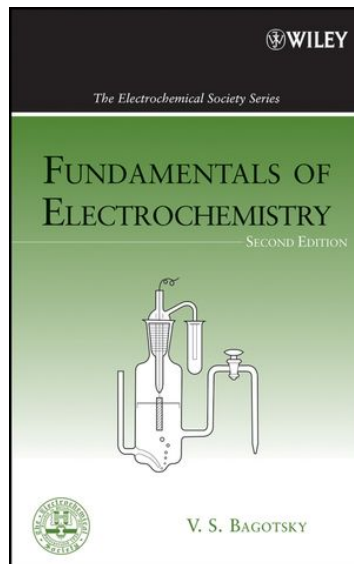
B: Senin 16.30 – 18.10 di S1.203

INT: Selasa 13.30 – 15.10 di S1.306



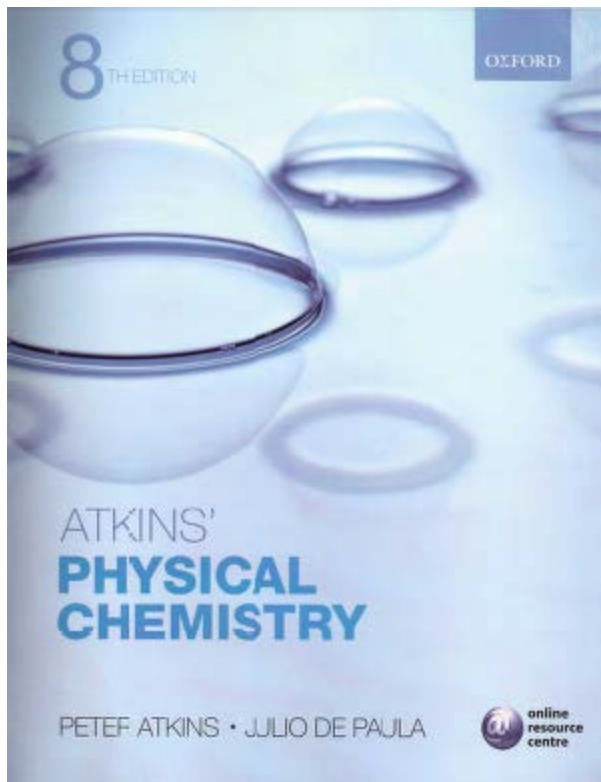
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5. Mohammed A. A. Khalid, 2013, Electrochemistry, InTech



Buku pegangan

- Atkins, P dan Paula, J. 2006, Atkin's Physical Chemistry, edisi 8, Oxford University Press, Oxford.
- Chapter 7, Chapter



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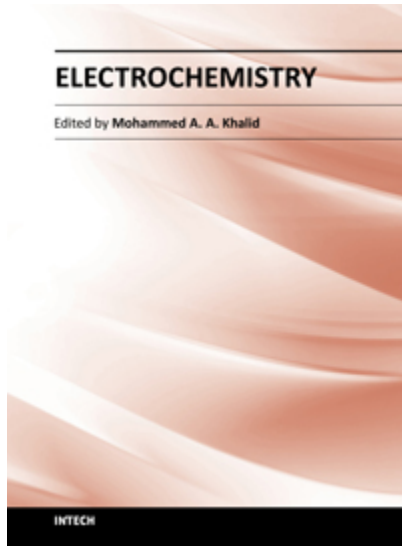
- Atkins, P dan Paula, J. 2006, Atkin's Physical Chemistry, edisi 8, Oxford University Press, Oxford.
- Chapter 7, Chapter 25

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Buku referensi

Mohammed A. A. Khalid, 2013, Electrochemistry, InTech
<http://www.e-booksdirectory.com/details.php?ebook=8636>



Chapter 1

Chromatographic, Polarographic and Ion-Selective Electrodes Methods for Chemical Analysis of Groundwater Samples in Hydrogeological Studies

Chapter 2

Electron Beam Ablation Phenomenon – Theoretical Model and Applications

Chapter 3

Oxidation Chemistry of Metal(II) Salen-Type Complexes

Chapter 4

Membrane Electrochemistry: Electrochemical Processes in Bilayer Lipid Membrane

Chapter 5

Potentiometric Determination of Ion-Pair Formation Constants of Crown Ether-Complex Ions with Some Pairing Anions in Water Using Commercial Ion-Selective Electrodes

Chapter 6

Shape Classification for Micro and Nanostructures by Image Analysis

Chapter 7

Electroanalytical Sensor Technology

Chapter 8

Microfluidic Devices Fabrication for Bioelectrokinetic System Applications



Sel Elektrokimia

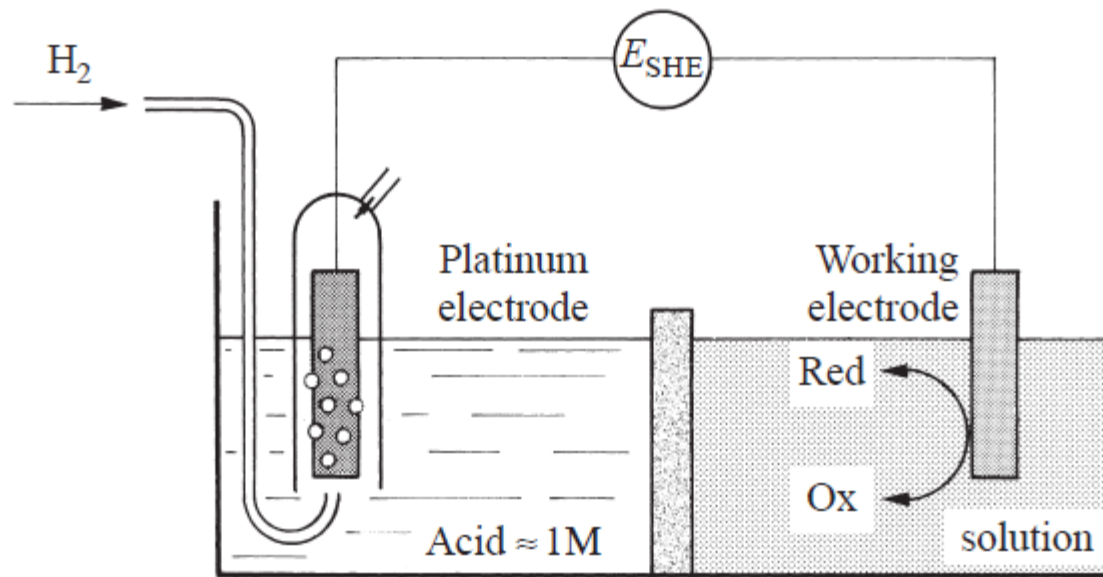


Fig. 2.2 Electrochemical cell for measuring the electrode potential on the SHE scale. A salt bridge is an ionic conductor introduced to physically separate the two solutions, but keeping at the same time their inner potentials equal or almost equal.



Sel Elektrokimia

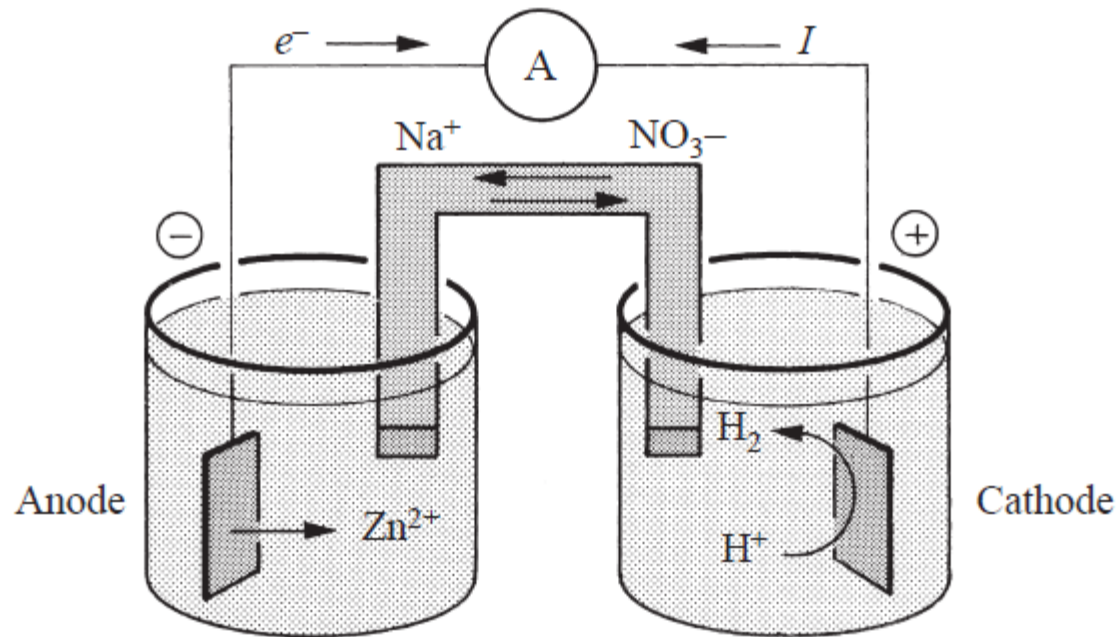
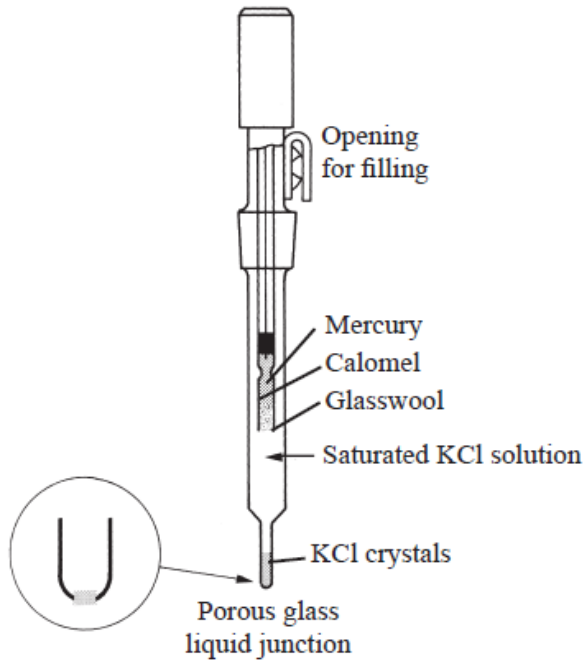


Fig. 2.3 Electrochemical dissolution of zinc. The beaker on the left and the salt bridge are filled with a solution of sodium nitrate, and the beaker on the right is filled with nitric acid.



Analisis elektrokimia



Calomel electrode with a liquid junction (Copyright Metrohm, CH).

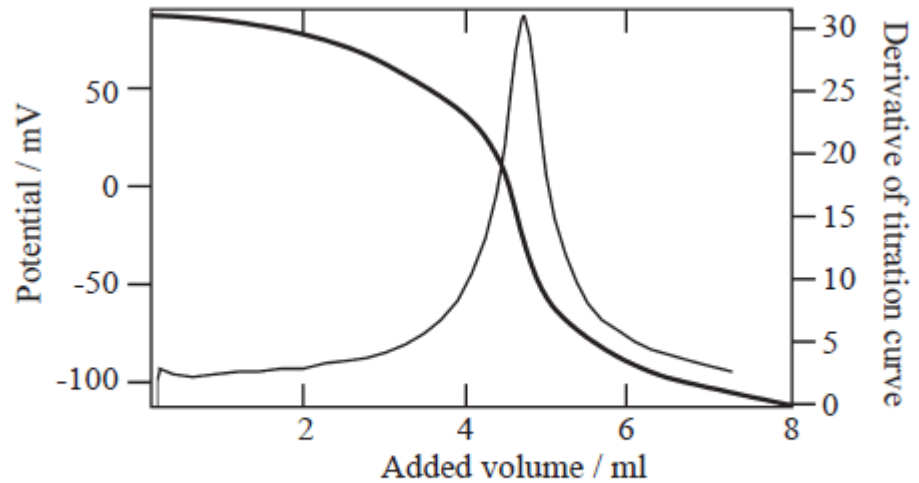
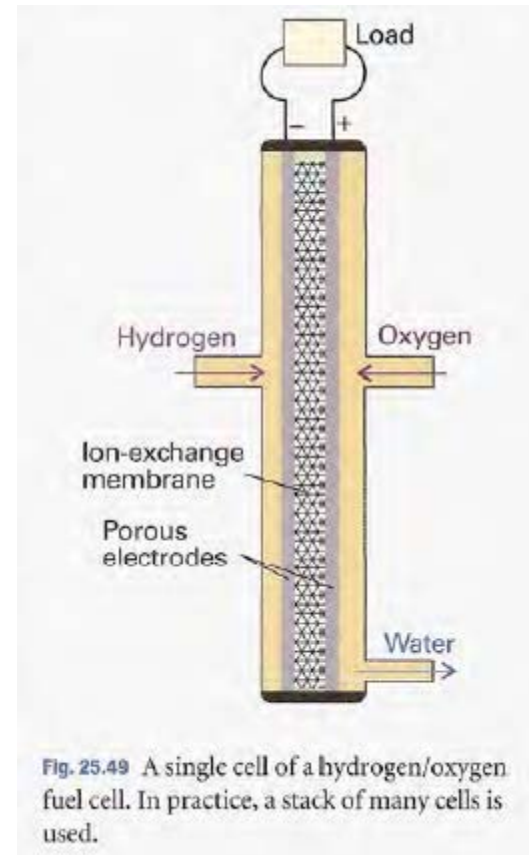
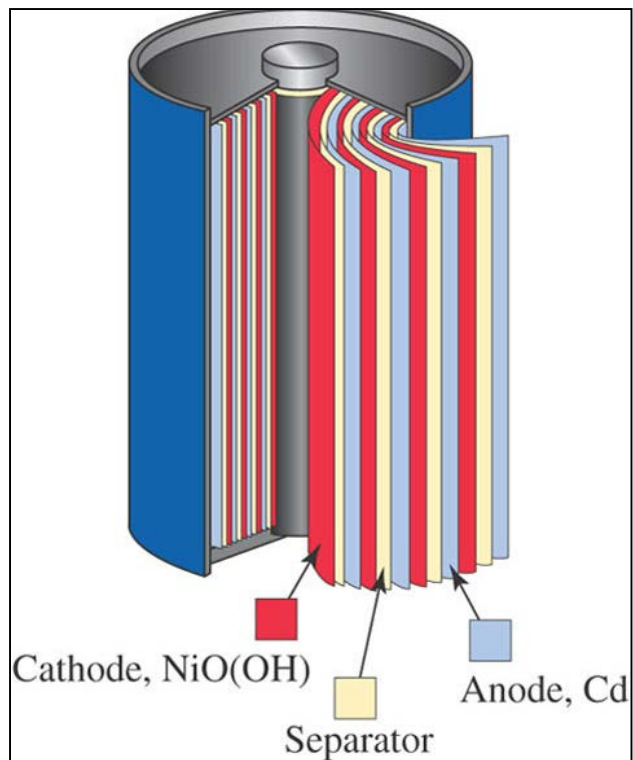


Fig. 2.20 Titration of an iodine solution with thiosulfate on a platinum electrode. The potential scale is arbitrary.



Energi kimia menjadi energi listrik



Perlindungan korosi

