

Environmental Chemistry Laboratory

Dr. Ayça Erdem Ünşar

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Duygu Hazal Göktepe**

13.02.2020

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Date	Group 1 & 3	Group 2 & 4
26 / 02	Standard Solutions, pH, conductivity, ionic strength	
04 / 03	Acidity	Color, Turbidity
11 / 03	Alkalinity	Solid matters
18 / 03	Color, Turbidity	Acidity
25 / 03	Solid Matters	Alkalinity
01 / 04	Practice Exam – 1	
08 / 04	MIDTERM	
15 / 04	Hardness	BOD
22 / 04	COD	Hardness
29 / 04	BOD	COD
06 / 05	Total Nitrogen & Total Phosphorus	
13 / 05	Practice Exam – 2	
20 / 05	No class	

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Important Dates

01 /04/ 2020	Practice Exam 1
04/ 2018	Midterm
13 /05/ 2020	Practice Exam 2
01-12 /06/ 2020	Final

Report due day : WEDNESDAY , Lab hour

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CATALOG Grading

Midterm	25 %
Reports	15 %
Practice Exam	20 %
Final	40 %

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Lab Report

- Submit your printed lab report in “Microsoft Office WORD” format.
- Font: ARIAL
- Font size: 10
- Single space
- No title page.
- If report does not follow the format, it will get **-10 points**.

Group No: X

Date of the exp.

Student 1, S2, S3, S4, S5

Left – 1.5 cm

Top – 1.5 cm

Right – 1 cm

Bottom – 1 cm

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Lab Report Outline

1. Name of the Experiment
2. Aim of the Experiment (5 p)
3. Theory (15 p)
4. Materials/instruments (5 p)
5. Method (10 p)
6. Data Analysis and Calculation (20 p)
7. Discussion and Conclusions (30 p)
8. References (5 p)
9. Lab notes (10 p)

(Lab report = max 2 pages)

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Lab Report

- **Name of the Experiment**
- **Aim of the Experiment (5 p)**
 - Describe the specific objectives of the experiment. It is suggested that purpose should not exceed 2 -3 sentences and students use their own words and sentences.
- **Theory (15 p)**
 - Give the essence of the theory of the experiment conducted, excluding unnecessary details, by referring to the related references.
 - Theory section should not exceed 1 page.
 - In text, surname of the author and year of the publication should be written precisely for the reference used. e.g : (Reynolds, 1982) or (Muiga and Reid, 1979). If the reference has three or more authors use the surname of the first one. and write "et al." e.g: (Rogers et. al. 1984) If the reference is from internet, you must use the name of the author or if it does not exist, indicate publisher e.g.(USEPA, 1996). If there is no information about the author or publisher, use URL by numbering e.g. (URL 1, 1996).
- **Materials/instruments (5 p)**
 - Chemicals, glass- plastic- metal apparatus, instruments should be written.
- **Method (10 p)**
 - Briefly and precisely, describe the methods, principles and procedures involved in the experiment conducted.
 - Please do not give the details of the experiment you conducted in the lab in this section.

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Lab Report

- **Data Analysis and Calculation (20 p)**
 - First, give the data obtained from the experiment. Arrange the data in tabular and/or figurized forms as much as possible. (5 p)
 - Perform necessary calculations and summarize your findings in concise tables and graphs. Show sample calculations.
 - Number and title the tables and figures corresponding to the experiment in order to facilitate the identification.
 - Pay attention to all units and make sure the units of all outcomes are written. Show the result of the experiment in this part.
- **Discussion and Conclusions (30 p)**
 - Discuss the data gathered and the results obtained from the experiment in details, referring to tables, figures and etc...
 - The intent is not to lead the reader through your interpretation of what happened but why it did and what it means?
 - The conclusion should summarize each key outcome.

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Lab Report

- **References (5 p)**

- Reference list should be given according to author surname in alphabetical order.
- If your information is from the internet, then write the full address of www page
- Lab Manual cannot be cited as a reference.
- References should be written as follows:
- Surname of the author, Initial of First name, Name of Book, Publication Company, Publication Place, Year.
 - Rogers, G.F.C, Mayhow, Y.R, Thermodynamics and Transport Properties of Fluids, 3rd Ed., Basil Blackwell, Oxford, 1982, pp. 100-105.
- Author (if any), Title of Site. URL # (accessed date), other identifying information.
 - e.g. USEPA, 2005. "document title", prepared by organization/division/branch name, web page: <http://www.....> (accessed on date).

- **Lab notes (10 p)**

- Each and every group member should take her/his own lab notes (1 page).
- At the end of the experiment, those lab notes should be signed by the lab assistant.
- The signed lab notes should be submitted with the Group's Lab Report every week.

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- ❖ Each group will prepare 1 lab report for each week's experiment. At the end of the semester, **9 lab reports** will be submitted by the groups.
- ❖ Reports will be submitted on **WEDNESDAY** to the authorized Lab assistant before the experiment.
- ❖ **Late reports** will get – **10 points/day**.
- ❖ If lab report is not in standard format, the report will get – **10 points**.
- ❖ The lab reports will be returned to the groups before the practice exams.

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PLAGIARISM

- If a group's lab report resembles to another groups' lab report,
- If a direct copy-paste from the reference,
- If same graphs, tables, etc are used by different groups,

the report/Group will get **0 point** !!!

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Laboratory Supplies

1. Lab coat
2. Lab gloves (2-3 boxes/group)
3. Marker pen
4. Liquid hand soap
5. Surface cleaner
6. Paper towel

If no lab coat & gloves → NO access to Experiment

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Laboratory Main Rules

- Lab coat should always be buttoned.
- Long hairs should be pony-tailed.
- No open toe shoes!
- During experiments, wear gloves.
- The student, who does not follow any of the rules, will get - 10 points for each rule

If no lab coat & gloves → NO access to Experiment



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Laboratory General Rules - I

- The lab door will be closed at 10:00 in the morning, and 13:30 in the afternoon. No student will be allowed after 10:00 and 13:30.
- When in lab, it is obligatory to wear lab coat and closed-toe shoe (if not, you will get – 10 points).
- No loose hair → hair should be uptight, ponytail etc.
- During conducting an experiment, you should always wear gloves.

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Laboratory General Rules - II

- **NO** eating, drinking, chewing gum and cell phone in the lab.
- **NO** running, wandering around and making practical jokes to fellow groupmates.
- If you have any open wounds, use band-aid or cover with any necessary medical supply.
- Clean your working area after the experiment.
- When leaving the lab, leave your lab stuff in your Group's space (drawer-shelf).

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Laboratory General Rules - III

- Do not mouth pipette any liquid solution, use pendant switch (Puar).
- Do not sniff/smell or taste any chemical solution.
- Before using the reactants/chemicals, check the labels first.
- If any amount of chemical was taken from the stock chemical bottle, do not put the left overs into the stock chemical bottle.

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Laboratory General Rules - IV

- When preparing acidic solutions, make sure that you put some d-H₂O first into the bottle.
- Label each prepared solution. Write your Group No, name and concentration of chemical, date of the experiment.



G-2
1 N NaOH
4 g/ 100 mL
26/02/2020

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Safety Signs



Toxic



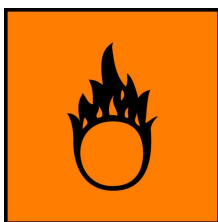
Harmful/ irritant



Flammable



Explosives



Oxidizing



Corrosives



Environmental hazard

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<http://chemistry.about.com/od/healthsafety/ig/Laboratory-Safety-Signs/index.01.htm>

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Chemical Label

Parti Numarası Tehlike Sembolü Son Kullanma Tarihi Katalog Numarası Güvenlik ve Taşıma Bilgisi Risk ve Güvenlik Numarası

K12345630
CH₃CN
1 l = 0.786 kg
M = 41.05 g/mol

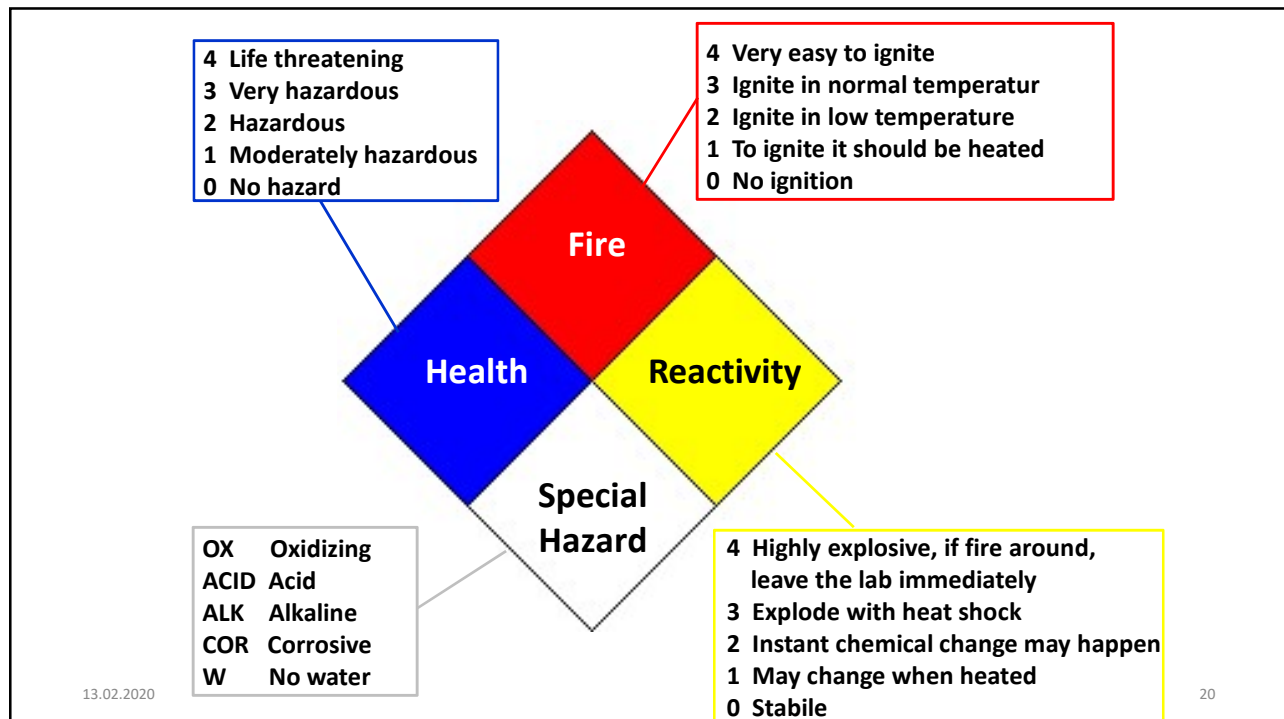
31.08.04
H228
H228
H228

1.00030.2500
LiChrosolv®
Acetonitril
gradient grade für die
Flüssigkeitschromatographie
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Acétonitrile
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Acetonitrile
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www.merck.de

2.51
IMO: ACETONITRILE
ICAO: ACETONITRILE
R: 11-20/21/22-36 S: 16-36/37
Leichterentzündlich, Gesundheitsschädlich beim Einatmen, Verschlucken und Berührung mit der Haut. Reizt die Augen. * Von Zündquellen fernhalten - Nicht rauchen. Bei der Arbeit geeignete Schutzhandschuhe und Schutzkleidung tragen.
Highly flammable. Harmful by inhalation. In contact with skin and if swallowed, irritating to eyes. * Keep away from sources of ignition - No smoking. Wear suitable protective clothing and gloves.
Facilement inflammable. Nocif par inhalation, par contact avec la peau et par ingestion. Irritant pour les yeux. * Conserver à l'écart de toute flamme ou source d'étincelles - Ne pas fumer. Porter un vêtement de protection et des gants appropriés.
Licht ontvlambaar. Schadelijk bij inademping, opname door de mond en aanraking met de huid. Irriterend voor de ogen. * Verwijd houden van ontstekingsbronnen - Niet roken. Draag geschikte handschoenen en beschermende kleding.
Facilmente inflamabile. Nocivo per inalazione, contatto con la pelle e per ingestione. Irritante per gli occhi. * Conservare lontano da fiamme e scintille - Non fumare. Usare indumenti protettivi e guanti adatti.
Facilmente inflamable. Nocivo por inhalación, por ingestión y en contacto con la piel. Irrita los ojos. * Conservar alejado de toda llama o fuente de chispas - No fumar. Usar ropa protectora y guantes de protección adecuados.
Facilmente inflamável. Nocivo por inalação, em contacto com a pele e por ingestão. Irritante para os olhos. * Manter afastado de qualquer chama ou fonte de ignição - Não fumar. Usar vestuário de proteção e luvas adequadas.

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Apparatus, devices and equipments used in the laboratory

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Metal and Plastic Apparatus



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Equipments



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