June 7, 2019

Guidance for Physical Chemistry Lab.

- Introduction of Teaching Staff
- Cautions in carrying out physical and chemical experiments
- Grouping / Schedule
- Location of Laboratories
- Preparation
- Report submission confirmation sheet
- How to make a graph
- Grades

Introduction of Teaching Staff

1. Mass spectrometry（Okada）
2. Radiation measurement （Yodo）
3. Electron and vibrational spectra（Takimoto）
4. Quantum chemical calculation A（Ikuta, Jiang）
5. Quantum chemical calculation B（Nanbu）
6. Gas chromatography（Kuze）

※ GS course teaching assistant （Karolis, Takaku）

Cautions in carrying out physical and chemical experiments

Please read it carefully!

Grouping & Schedule

FY2019 Physical Chemistry Lab.

			Fir.	Thur.	Fir.	Thur.	Fir.	Thur.	Fir.	–	–	Thur.	Fir.	Thur.	Fir.	Thur.	Fri.	
Group		Pattern A	6/7	6/13	6/14	6/20	6/21	6/27	6/28	7/4	7/5	7/11	7/12	7/18	7/19	7/25	7/26	
		Pattern B	6/7	6/13	6/14	6/20	6/21	6/27	6/28	7/4	7/13	7/11	7/12	7/18	7/19	7/25	7/26	
		Pattern C	6/7	6/13	6/14	6/20	6/21	6/27	6/28	6/29†	7/4	7/11	7/12	7/18	7/19	7/25	7/26	
		Pattern D	6/7	6/13	6/14	6/20	6/21	6/27	6/28	6/30	7/4	7/11	7/12	7/18	7/19	7/25	7/26	
A	A01	A1776102	Guidance	1. Mass Spec.	make a report	3. Radiation	2. Electron Spec.	4. Com. Chem.A	5. Com. Chem. B	6. Gas Chrom.	1							
	A02	A1776808	Guidance	1. Mass Spec.	make a report	3. Radiation	2. Electron Spec.	4. Com. Chem.A	5. Com. Chem. B	6. Gas Chrom.	2							
	A03	A1776819	Guidance	1. Mass Spec.	make a report	3. Radiation	2. Electron Spec.	4. Com. Chem.A	5. Com. Chem. B	6. Gas Chrom.	3							
	A04	A1776462	Guidance	1. Mass Spec.	make a report	3. Radiation	2. Electron Spec.	4. Com. Chem.A	5. Com. Chem. B	6. Gas Chrom.	4							
	A05	A1776034	Guidance	1. Mass Spec.	make a report	3. Radiation	2. Electron Spec.	4. Com. Chem.A	5. Com. Chem. B	6. Gas Chrom.	5							
	A06	A1776516	Guidance	1. Mass Spec.	make a report	3. Radiation	2. Electron Spec.	4. Com. Chem.A	5. Com. Chem. B	6. Gas Chrom.	6							
	A07	A1776611	Guidance	1. Mass Spec.	make a report	3. Radiation	2. Electron Spec.	4. Com. Chem.A	5. Com. Chem. B	6. Gas Chrom.	7							
	A08	A1776013	Guidance	1. Mass Spec.	make a report	3. Radiation	2. Electron Spec.	4. Com. Chem.A	5. Com. Chem. B	6. Gas Chrom.	8							
	A09	A1776423	Guidance	1. Mass Spec.	make a report	3. Radiation	2. Electron Spec.	4. Com. Chem.A	5. Com. Chem. B	6. Gas Chrom.	9							
	A10	A1776056	Guidance	1. Mass Spec.	make a report	3. Radiation	2. Electron Spec.	4. Com. Chem.A	5. Com. Chem. B	6. Gas Chrom.	10							
	A11	A1776086	Guidance	1. Mass Spec.	make a report	3. Radiation	2. Electron Spec.	4. Com. Chem.A	5. Com. Chem. B	6. Gas Chrom.	11							
	A12	A1776312	Guidance	1. Mass Spec.	make a report	3. Radiation	2. Electron Spec.	4. Com. Chem.A	5. Com. Chem. B	6. Gas Chrom.	12							
B	B01	A1776646	Guidance	6. Gas Chrom.	1. Mass Spec.	2. Electron Spec.	make a report	3. Radiation	4. Com. Chem.A	5. Com. Chem. B	13							
	B02	A1776285	Guidance	6. Gas Chrom.	1. Mass Spec.	2. Electron Spec.	make a report	3. Radiation	4. Com. Chem.A	5. Com. Chem. B	14							
	B03	A1476239	Guidance	6. Gas Chrom.	1. Mass Spec.	2. Electron Spec.	make a report	3. Radiation	4. Com. Chem.A	5. Com. Chem. B	15							
	B04	A1776425	Guidance	6. Gas Chrom.	1. Mass Spec.	2. Electron Spec.	make a report	3. Radiation	4. Com. Chem.A	5. Com. Chem. B	16							
	B05	A1776500	Guidance	6. Gas Chrom.	1. Mass Spec.	2. Electron Spec.	make a report	3. Radiation	4. Com. Chem.A	5. Com. Chem. B	17							
	B06	A1776015	Guidance	6. Gas Chrom.	1. Mass Spec.	2. Electron Spec.	make a report	3. Radiation	4. Com. Chem.A	5. Com. Chem. B	18							
	B07	A1776486	Guidance	6. Gas Chrom.	1. Mass Spec.	2. Electron Spec.	make a report	3. Radiation	4. Com. Chem.A	5. Com. Chem. B	19							
	B08	A1776996	Guidance	6. Gas Chrom.	1. Mass Spec.	2. Electron Spec.	make a report	3. Radiation	4. Com. Chem.A	5. Com. Chem. B	20							
	B09	A1776138	Guidance	6. Gas Chrom.	1. Mass Spec.	2. Electron Spec.	make a report	3. Radiation	4. Com. Chem.A	5. Com. Chem. B	21							
	B10	A1776540	Guidance	6. Gas Chrom.	1. Mass Spec.	2. Electron Spec.	make a report	3. Radiation	4. Com. Chem.A	5. Com. Chem. B	22							
	B11	A1776377	Guidance	6. Gas Chrom.	1. Mass Spec.	2. Electron Spec.	make a report	3. Radiation	4. Com. Chem.A	5. Com. Chem. B	23							
	B12	[illegible]									24							
	B13	[illegible]									25							

- Check your student number & name.
- Your group is “E”.

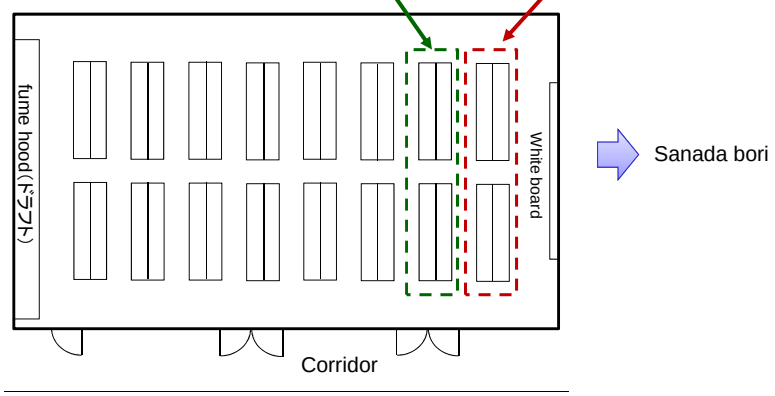
The experimental partner will be decided randomly.

Laboratory #1

Electron Spectra

Radiation

Room 3－520 (Buld. No.3. 5F)

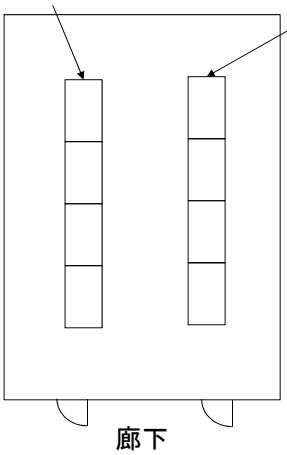


Laboratory #2

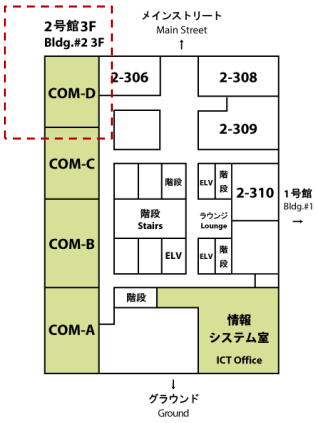
Gas Chromatography

Mass Spec.

Computational Chem. A, B



Room 3－322(Buld. No.3, 3F)



Room COM-D (Buld. No.2, 3F)

Preparation

1. Itemize experimental procedures / Experimental operation described in flowchart form
2. Write a list of reagents and instruments
3. Execute “Preparation Exercises” in the text

- Teaching staff will check your preparation before the start of the experiment on the first day of each experimental theme.
- Come to the laboratory until 13:15.
- Those who did not do the above preparation must prepare in situ before starting the experiment.

Report submission confirmation sheet

Report Submission Checklist
Physical Chemistry Lab., 2019

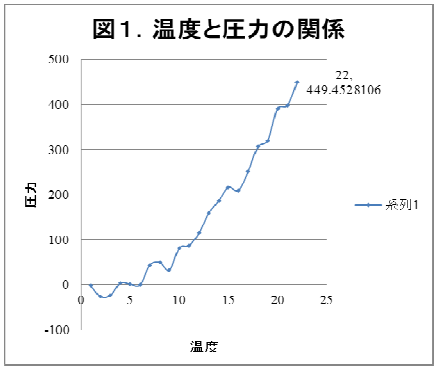
ID number	Name

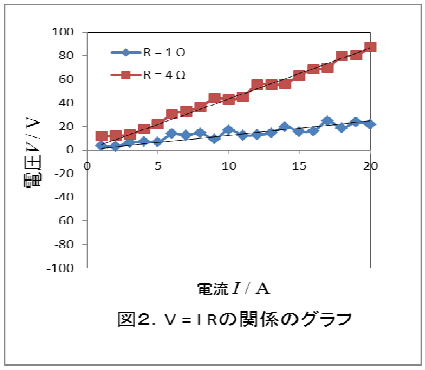
Laboratory session	Start and end dates	Check for completion	Report submission date	Report receipt
IV-1 Basis of mass spectrometry	~			
IV-2 Identification of nuclides by radiation measurement and radioactivity	~			
IV-3 Electron and vibrational spectra	~			
IV-4 Computational Chemistry A	~			
IV-5 Computational Chemistry B	~			
IV-6 Qualitative and quantitative analyses by gas chromatography	~			

How to make a graph

- Be sure to put a specific title in the graph. The title is written below the graph with the graph number. A description of the graph may be added after the title if necessary.
- Be sure to specify the vertical axis and horizontal axis caption and the unit. Please refer to the graphs in the next pages for how to put units. In this experiment, we will use unit notation based on the idea of plotting “numerical values” divided by the dimensions of the measured data on a graph. For example, if the horizontal axis is frequency, the unit is “ f / Hz" or "frequency / Hz", and if it is temperature, "T / K" or "temperature / K". The unit should be written in Roman style.
- If there is no unit in the data, add symbols and explanations that make sense.
- If you plot multiple data points in one graph, put a legend (see the examples).
- Be sure to put a scale on the graph. Put numbers on the scale at appropriate intervals.
- Never put the horizontal axis and the vertical axis at a halfway point such as the center of the graph (common when using EXCEL).
- Be careful not to make the size of the plotted points too small.
- Do not connect the plotted points meaninglessly unless there is a theoretical background connecting the data with lines.
- Do not show values at plotted points.
- Add error bars to the data points as needed.

Bad…





Good...

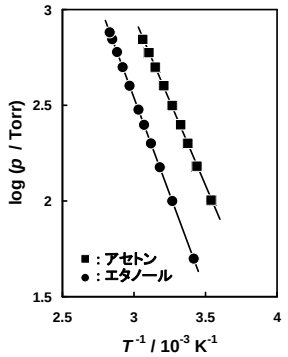


Fig. 1 Temperature dependence of vapor pressures of acetone and ethanol.

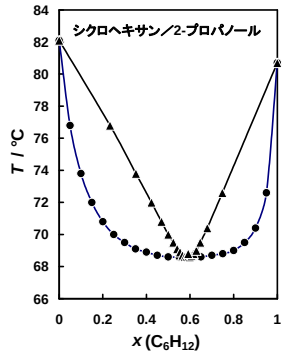


Fig. 2 Vapor-liquid phase equilibrium diagram of cyclohexane/2-propanol system.

Grades

出席状況／Attendance（40.0%）

レポート／Report（50.0%）

その他／Others(in detail)（10.0%）
Evaluation of the report includes evaluations of teaching and interview of the report. Evaluation of the preparation is added to the above evaluations.

Laboratory & Teaching Staff

1. Mass Spec.	2. Radiation	3. Electron Spectra	4. Comp. Chem. A	5. Comp. Chem. B	6. Gas Chro.
Okada	Yodo	Takimoto	Ikuta Jiang	Nanbu	Kuze
3-322	3-520	3-520	COM-D	COM-D	3-322

※GS course TA: Karolis, Takaku

Check your next schedule.