

ELEC-E9210

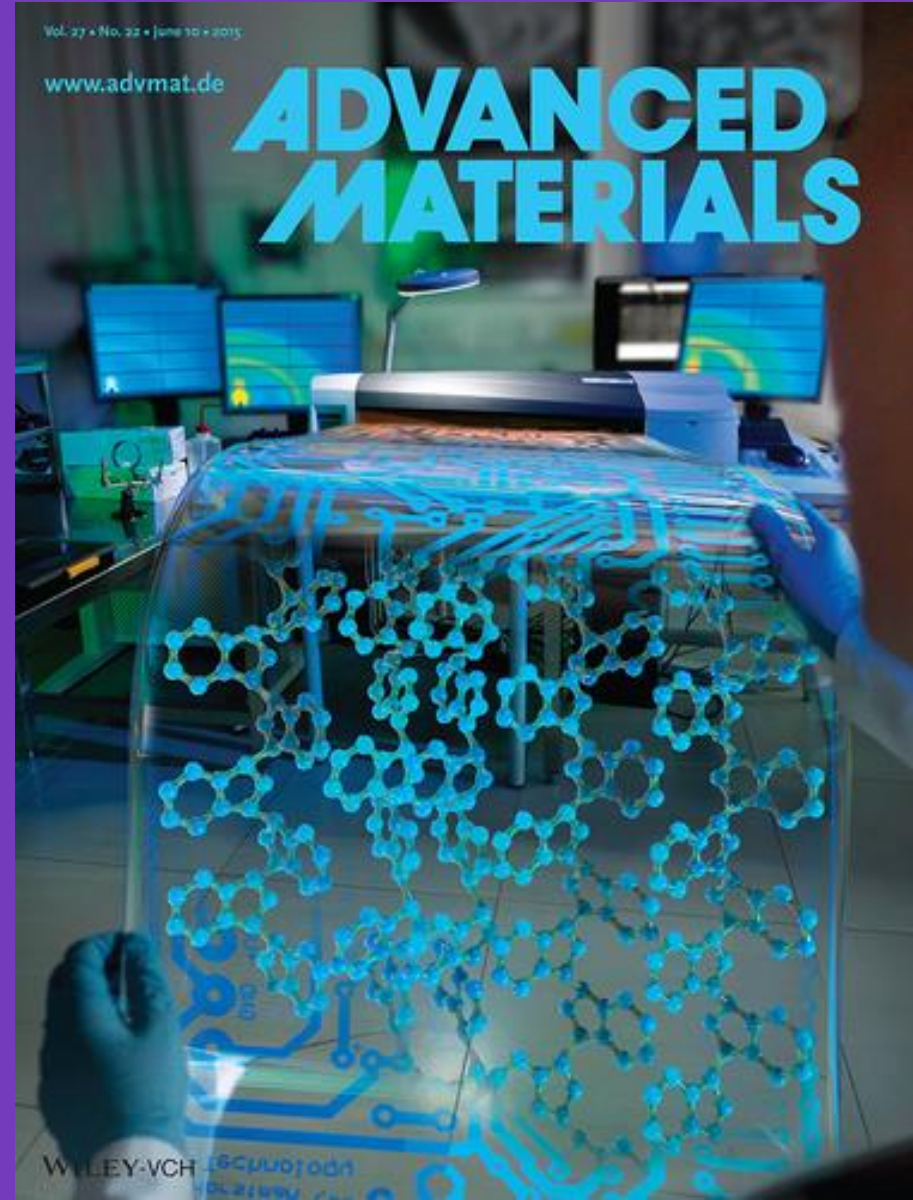
Organic Electronics: Materials, Devices & Applications

Fall 2020



Aalto University
School of Electrical
Engineering

organicelectronics.aalto.fi



Learning Outcomes

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By the end of this course:

- You will learn about structure and properties of organic materials and devices, their functioning and properties, and field of applications.
 - Principle of organic materials (OMs)
 - Properties of OMs, including electronic and optical properties
 - Organic devices and working principles (*i.e.* transistors, diodes, sensors, solar cells)
 - Applications of organic materials and devices
- You will be capable of critically reading and understanding a scientific text, extrapolating main ideas, summarizing your readings and presenting your findings.
- You will be capable of delivering and assess clear scientific communication, including your own and your peers.



(Online) Class Rules

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Video ON

(if you wish so and if this does not interfere with communication quality)



Mute ON

feel free to interrupt the class anytime for questions and comments



Introduce Yourself

whether you are asking a question or making a comments during class, please introduce yourself. I will try to memorize your names and face



Breaks

break(s) and different activities during the class, your attendance and participation: 1pt/class



Office Hours

one hour after each class (except on 15.10) or you can contact me at caterina.soldano@aalto.fi

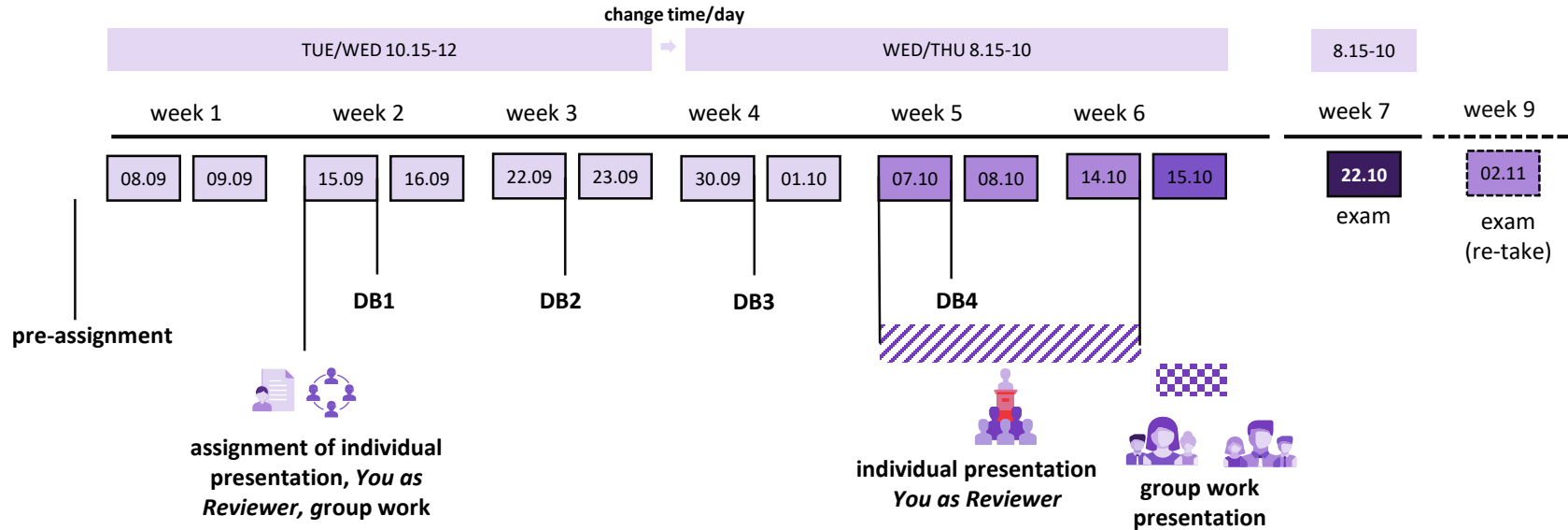


Microsoft Teams

is our *live* communicating platform: you can add messages, ask questions. I encourage you to interact with your colleagues

Timeline & Activity DL

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All information and instructions will be available on MC

Description of Assignments

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- **Discussion Boards** Each student will be asked to post on workshop space in MC on weekly basis (4 times total). Workshop will be open for a week and will close on **h18.00** on the deadline date.
- **Individual Presentation** Each student will be assigned with a scientific publication in the field of Organic Electronics and will have to present the paper to his/her colleague. Maximum time for the presentation is **30 minutes** (including Q&A, reviewer). (see MC for the day of your presentation)
- **You as Reviewer** Each student will act as reviewer for one of his/her colleagues for their individual presentation. This assignment includes critical reading of the assigned paper, questions/comments during the presentation and a review form to be submitted. (MC for the day of “You as Reviewer”)
- **Group Work** students will be divided in groups (**3-4**) and a “**molecule**” will be assigned to each group. Each student will be expected to report to his/her group on one relevant aspect of such molecule (*i.e.* chemical structure, electronic and optical properties, use in devices, applications). For this, the student will retrieve 1-3 (or as many you need) relevant scientific publication(s). Each group will present its work to other groups on **15.10.2020**. (presentation, poster are examples of acceptable workgroup output. If you have other ideas, please do not hesitate to discuss with me). Maximum time available for each group is **30 minutes** (including Q&A, comments).
- **Exam** focus of the exam is to verify your capacity to extract and summarize information in a timely manner and within length constraints (*i.e.* points can be taken if the answers are too long - if specific length is asked for, if you miss the point and rely different information just to fill the space).

Grading

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▪ EXTRA POINTS

- **Essay (max 10 point/assignment).** on request, an essay can be written. Several topics will be provided for the students to choose. You can let me know at the latest 1 week after the exam (29.10). DL for submission is **13.11.2020** (let's discuss topics, if interested)
- **Attendance (1point/class)** you will earn 1 extra point for class attendance and participation in activities (not included: *exam, workgroup representation (15.10)* and *your individual presentation /You as Reviewers*), max **10 points**.

Final grade scale

- 50-59 = grade **1**
- 60-69 = grade **2**
- 70-79 = grade **3**
- 80-89 = grade **4**
- ≥ 90 = grade **5**

Assignment	Points (max)
Pre-Assignment	2
Discussion Board	8 (2/each)
Presentation	25
<i>You as Reviewer</i>	10
Group Work	30
Exam	25
Total	100

Extra point	
Attendance*	1/class
Essay	0-10

* not included: workgroup presentation day (15.10), day of your presentation/*You as Reviewers* (individual deadlines), exam (22.10)

Description of Assignments

Assignment	Assigned on	DL	Workload ^a
Pre-Assignment	before class	04.09	2h
Discussion Boards	08.09 15.09 22.09 30.09	15.09 22.09 30.09 07.10	10h
Individual Presentation	15.09	TBD ^b	35h
You as Reviewer	15.09	TBD ^b , 22.10	20h
Group work	15.09	15.10	35h
Exam	-	22.10	30h
Total			132h
Essay	before 29.10	13.11	30h

NOTE:

Be aware that exact deadlines are at **18.00h** on the date.

^a Please report how much time you have spent on preparing each assignment. This will help estimating the real workload. Thanks!

^b This will be an individual deadline. It will depend on the day of your presentation
 → presentation file: day of your presentation
 → reviewer form: no later than **22.10**

ELEC-E9210 Resources

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- **Slides** from the teacher (will be uploaded on MC the day before the class, so you can have a look at it and take notes during our sessions).
 - Many slide contained reference to scientific papers. All materials is referenced so you can retrieve the paper if looking forward for more detailed readings; all papers are peer-reviewed.
- **Books:**
 - *Organic Field Effect Transistors - Theory, Fabrication and Characterization* I. Kysmissis, Springer (2009)
 - *Physics of Organic Semiconductors* Wiley-VCH, edited by W. Brütting (2005)
 - *Organic Electronics, Materials, Processing, Devices and Applications* ed. by F. So, CRC Press (2010)



Some More Info...

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- **Feedback** during classes, I will be asking for frequent feedback which will be helpful for the further development of this course. Feedback will be anonymous. THANKS!
You can also write directly to me if you have comments, suggestions that you will like to share (email: caterina.soldano@aalto.fi)
- **ELEC-E9210 MC space** if you encounter any problem when submitting materials, or wrong/not precise information on MyCourses, please let me know ASAP (either by email or through MTeams)