

On-line Course on Basic Materials Science, 14. – 15.6.2018

University of Utrecht, The Netherlands

This course will be given online using Adobe Connect. The Adobe Connect link works best in the Google Chrome Browser. The link to access the webinar session:

<https://universiteitutrecht.adobeconnect.com/ocuther/>

The program of the online course is listed below. It will consist of short 20 min lectures with breaks in between. During the break you can stretch your legs, but you will also be challenged by the speaker to think of a question/problem that will then be discussed at the beginning of the next session. In addition to the lectures you will be given an assignment to work on in groups of 2-3 people. Details are given below.

14 June

9:45-10:00 Introduction of the online course "Basic Materials Science" by Tina Vermonden and Enrico Mastrobattista
10:00-10:20 hrs Session 1: Jan van Hest - Elemental properties of polymers and basic chemistry
10:30-10:50 hrs Session 2: Jan van Hest
11:00-11:20 hrs Session 3: Jan van Hest
11:20-12:00 Introduction to the assignment
13:00-13:20 Session 1: Johan Engbersen- Polymeric materials for gene delivery
13:30-13:50 Sesssion 2: Johan Engbersen
14:00-14:20 Session 3: Johan Engbersen
15:00-15:20 Session 1: Jerry Lau - peptide chemistry
15:30-15:50 Session 2: Jerry Lau - basic properties of peptide self-assembly
16:00-17:30 Work in couples on the assignment

15 June

9:00-9:20 Session 1 Enrico Mastrobattista - Basic properties of lipids as building blocks for nanocarriers
9:30-9:50 Session 2 Gert Storm - Applications of lipids in nanomedicines
10:00-10:20 Session 1 Wim Hennink - Biodegradable Polymers
10:30-10:50 Session 2 Wim Hennink
11:00-11:20 Session 3 Wim Hennink
11:30-11:50 Session 1 Tina Vermonden - Biomaterials for regenerative medicine
12:00-12:20 Session 2 Tina Vermonden -
13:00-13:20 Session 1 Rob Steendam - Microparticulate systems for drug delivery
13:30-14:00 Session 2 Rob Steendam - TBA
14:00-17:00 Work in couples on the assignment
19 June 12:00 hrs deadline handing in the assignment

Assignment:

You will work in groups of 2/3 students on an assignment. You can use Skype and your headset for online meetings/discussions. Subgroups can each choose from 3 materials: 1. peptides/proteins, 2. polymers and 3. lipids. The assignment will consist of two parts:

Part A:

1. Find a recent research articles (not older than 2016) from a high impact journal (IF>4) in which your material of choice has been used as building block for ocular drug delivery
2. Summarize the main findings of this article
3. What was the rationale of using this particular material? Would other materials in your opinion be more suitable for the application?
4. What are in your opinion still the shortcomings/bottlenecks before the described approach can be applied in the clinic?
5. Give a suggestion for a follow-up experiment

Part B:

Make a PPT presentation of 5-10 slides in which you present an innovative approach to ocular drug delivery in patients with retinitis pigmentosa in which your material of choice plays an important role. Your presentation should at least cover the following aspects:

1. Short description of the disease and targets for intervention
2. Drug to be used and mode of action
3. Role of material in optimizing drug release/exposure
4. Route of administration
5. Dosing scheme
6. Possible side effects (drugs/materials)

We wish you a joyful and meaningful experience.

Tina Vermonden & Enrico Mastrobattista