

Programme and registration details (updated 3 July 2017)

Summer School on
Chiral Crystallization, Resolution & Deracemization
Organized in collaboration with ITN CORE, EFCE Working Party on
Crystallisation and COST Action CM 1402

open for participants from academia and industry

3 – 6 July 2017

Radboud University, Nijmegen, The Netherlands

Registration deadline: 16 June 2017

Organizers: Prof. Elias Vlieg and Dr. Hugo Meekes



This goal of this summer school is to outline the basics of chirality and chiral purification in the context of crystallisation. In 1848 Louis Pasteur discovered that biological molecules can be chiral, i.e., occur in both a left-handed and a right-handed form. Such molecules are each other's (non-superimposable) mirror image, but identical otherwise. In a normal chemical synthesis the two enantiomers will be produced in equal amounts. Life on earth, however, is found to be predominantly homochiral, with only one type of handedness present of a specific biomolecule. On the one hand this raises the fundamental question how this single-handedness occurred. On the other hand this has practical consequences since the human body can respond very differently to the two enantiomers and thus for pharmaceutical applications it is often necessary to produce a chirally pure product.

This summer school will teach the participants the current state of the art in different routes to produce chirally pure material. The focus is on methods involving crystallisation, and thus the school starts with the fundamentals of crystal growth and the crystallography of chiral compounds. Subsequently the most important chiral purification methods will be presented.

We encourage active participation of the students by (1) having a discussion/exercise session after each lecture series and (2) organizing a poster session in which each participant has the opportunity to discuss his/her current research with the other participants.

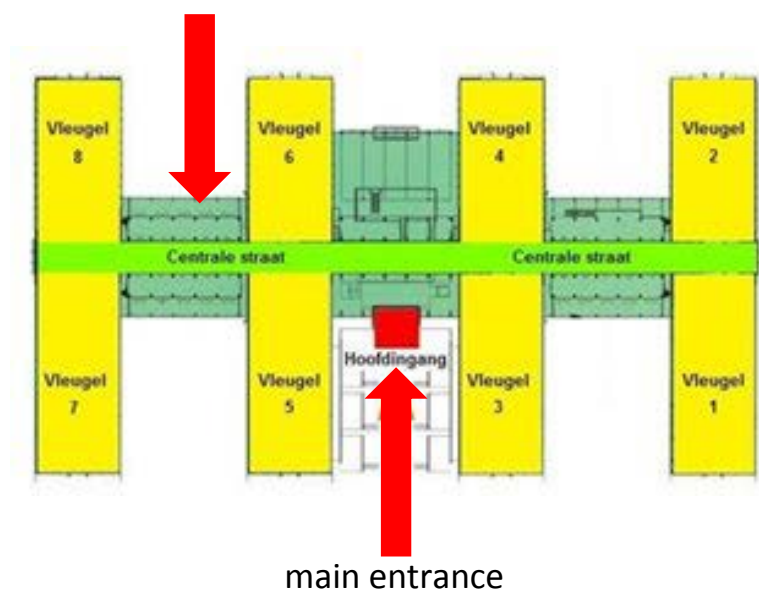
Elias Vlieg & Hugo Meekes

Venue

Directions to the Radboud University and a map of the campus are located at the end of this document. The school will be held in Room HG00.062 of the Huygens Building, which is number 15 on the map.



room HG00.062 (ground floor)



Lectures

Introduction to Chirality, Prof Elias Vlieg, Radboud University, Netherlands

Thermodynamics and Phase Diagrams, Prof Gerard Coquerel, University of Rouen,
France

Crystal nucleation, Prof Joop ter Horst, University of Strathclyde, UK

Crystallography of Chiral Compounds, Dr. René de Gelder, Radboud University,
Netherlands

Growth Mechanisms, Dr. Willem van Enckevort, Radboud University, Netherlands

Preferential crystallisation & Process Modelling, Prof Joop ter Horst, University of
Strathclyde, UK

Diastereomeric Resolution, Dr. Ton Vries (Syncom BV, Netherlands)

Processes to separate enantiomers, Prof. Andreas Seidel-Morgenstern, Otto-von-
Guericke-Universitaet, Germany

Viedma ripening - experimental, Dr. Hugo Meekes, Radboud University, Netherlands

Viedma ripening - theory, Prof Elias Vlieg, Radboud University, Netherlands

***The school will include a poster session for participants, plus an excursion and
a Summer School dinner.***

Schedule

All lectures will be held in room HG00.062

	summer school			
	Monday	Tuesday	Wednesday	Thursday
	03/07/2017	04/07/2017	05/07/2017	06/07/2017
09:00		R. de Gelder	J. ter Horst	A. Seidel-Morg.
09:15		Crystallography	Pref. Cryst.	Process. separ.
09:30	registration			
09:45	coffee/tea	break	break	break
10:00		R. de Gelder	J. ter Horst	A. Seidel-Morg.
10:15		continued	Proc. modelling	continued
10:30	E. Vlieg			
10:45	Introduction	discussion/ exercise	discussion/ exercise	discussion/ exercise
11:00				
11:15	coffee/tea	coffee/tea	coffee/tea	coffee/tea
11:30				
11:45	G. Coquerel	W. v. Enkevort	T. Vries	H. Meekes
12:00	Thermodyn.	Growth	Diasterom. Res.	Viedma exp.
12:15				
12:30	lunch	lunch	break/snack	lunch
12:45			T. Vries	
13:00			continued	
13:15				
13:30	G. Coquerel	W. v. Enkevort	disc./exerc.	H. Meekes
13:45	continued	continued	excursion to	continued
14:00			Kröller-Müller	
14:15	discussion/ exercise	discussion/ exercise	Museum	discussion/ exercise
14:30				
14:45	J. ter Horst	Posters	lunch in bus	E. Vlieg
15:00	Nucleation	coffee/tea		Viedma theor.
15:15				
15:30	coffee/tea			discussion/ exercise
15:45				
16:00	J. ter Horst			coffee/tea
16:15	continued			
16:30				
16:45	discussion/ exercise			
17:00				
19:00			dinner in Humphrey's restaurant Nijmegen	

Excursion and dinner on Wednesday, 5 July 2017



On Wednesday afternoon, we have a break from the school schedule and have a chance to relax, socialize and visit one of the nicest museums in The Netherlands, the Kröller-Müller museum (krollermuller.nl/visit) that is beautifully located in the National Park De Hoge Veluwe. The museum is famous for its collection of Van Gogh paintings and its sculpture garden. In order to have sufficient time to enjoy the museum and park, we have a tight and strict time schedule. Lunch will be served on the bus.

13:50 assemble in front of the Huygens building

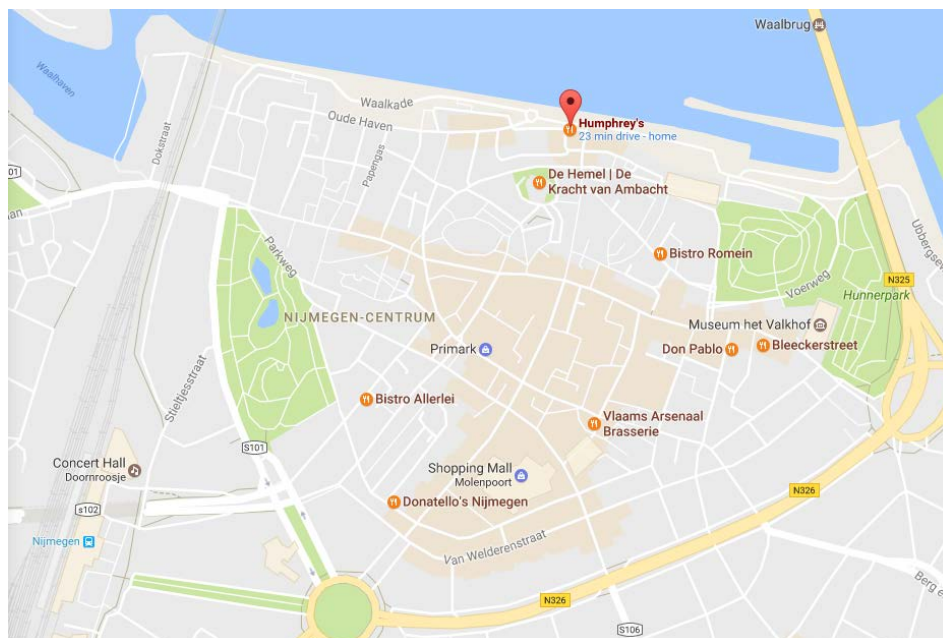
14:00 bus leaves for Kröller-Müller museum

15:00 time to explore the museum and sculpture garden by yourself. The garden closes at 16:30, the museum at 17:00.

17:20 assemble at parking lot

17:30 bus leaves for Nijmegen

19:00 dinner in Humphrey's Restaurant, Vismarkt 7, Nijmegen



Accommodation

You will have to make hotel arrangements yourself, but we recommend the following hotels:

Mercure Hotel Nijmegen Centre

Stationsplein 29

6512 AB NIJMEGEN - NETHERLANDS

Telefoon : (+31)24/3238888 - Fax : (+31)24/3242090

<http://www.accorhotels.com/gb/hotel-1356-mercure-hotel-nijmegen-centre/index.shtml>

Price: 1 adult room about € 90 excl. breakfast

Apollo Hotel Nijmegen

Bisschop Hamerstraat 14

6511 NB Nijmegen

TEL: 0031 (0) 24 322 35 94

FAX: 0031 (0) 24 323 31 76

WWW.APOLLOHOTEL.NL

Price: 1 adult room about € 85,- excl. breakfast

Hotel Restaurant Rozenhof

Nijmeegsebaan 114

6564 CK Heilig Landstichting

Telefoon: 024 323 0359

www.rozenhof.nl

Price: 1 adult room about €66,- incl. breakfast buffet

Hotel van der Valk Nijmegen-Lent

Hertog Eduardplein 4

6663 AN Nijmegen

Telefoon:024 792 0200

www.valknijmegen.nl

Price: 1 adult room about €89,-

Price breakfast: €13,50

Registration

Deadline: 16 June 2017

Participants from academia, industry and alike are invited to join. The fee covers the lectures, daily coffee and lunch breaks and the excursion plus school dinner; accommodation is not included. There is no reduced fee for participants who will only partly attend the school.

This school is supported by COST Action CM 1402 Crystallize. Participants from groups that are part of this COST action (check with your supervisor!) will have to follow the normal registration procedure, but can have their expenses reimbursed using the standard COST procedures.

There is room for approximately 50 participants, so we advise you to register as early as possible.

If you want to join the school, please complete the following two steps:

(1) send an e-mail to e.salem@science.ru.nl with the following information:

- subject: ITN CORE summer school
- your name and affiliation
- whether you are a member of a group participating in the COST Action CM 1402 Crystallize and want to have your costs reimbursed through this action.
- the title of your poster

(2) pay the registration fee of € 350 using the following steps:














- name: St. KU Radboud Universiteit
- address: Nijmegen, The Netherlands
- IBAN: NL08 ABNA 023124 7834
- BIC: ABNANL2A
- important: state '**budgetnr 6201038**' with your payment

Once we have received your registration and payment, you will receive notification of your acceptance.

Most important buildings

- 1 Aula
- 2 Bestuursgebouw (Administration Building)
- 2 Centrale Studentenbalie (Student Information Desk)
- 3 Max Planck Institute (MPI)
- 4 Grotiusgebouw  *Het Gerecht*
- 5 Spinozagebouw  *DE Café*
- 6 Thomas van Aquinostraat
- 7 Thomas van Aquinogebouw Collegezalencomplex
 *Cultuurcafé*, across from  *Boekhandel / Global Lounge*
- 8 Universiteitsbibliotheek (University Library)
- 9 Erasmusgebouw   *University Restaurant De Refter*
- 10 Gymnasium / Radboud Sports Centre  *Sportcafé*
- 11 Student Housing Association (SSHN)
- 12 Guesthouse
- 13 Mercator III
- 14 Linnaeusgebouw Collegezalen
- 15 Huygensgebouw 
- 16 Mercator I
- 17 Mercator II
- 18 Transitorium
- 19 FELIX Laboratory
- 20 Logistiek Centrum (Logistics Centre)
- 21 Goudsmitpaviljoen (NMR)
- 22 Proeftuin (Experimental Garden)
- 23 Daycare Centre
- 24 Bedrijvenscentrum (Business Centre)
- 25 HFML / Nanolab
- 26 Forum / ICT Service Centre
- 27 Trigon / Donders Institute 
- 28 Huize Heyendaal (Het Kasteeltje) 
- 29 Radboud university medical center 
- 30 Radboud university medical center
- 31 Dentistry 
- 32 GWT Werf (Groundskeeper)
- 33 Studentenkerk (Student Church) / Open University
- 34 Atrium / Department of Occupational Health & Safety and Environmental Service (AMD) / Relief Fund
- 35 Villa Oud Heyendaal / Staff Association
- 36 Radboud Auditorium



-  Radboud University
-  Mercator Technology & Science Park
-  Radboud university medical center
-  other buildings
-  main entrance
-  catering
-  bookstore
-  supermarket
-  carpark
-  indoor parking
-  bus stop
-  train station
-  bicycle & footpath

Addresses of important buildings

- 1 Aula *Comeniuslaan 2*
- 2 Bestuursgebouw (Administration Building) *Comeniuslaan 4*
- 2 Centrale Studentenbalie (Student Information Desk) *Comeniuslaan 4*

Addresses of faculties

- 9 Faculty of Philosophy, Theology and Religious Studies *Erasmusplein 1*
- 9 Faculty of Arts *Erasmusplein 1*
- 29 Faculty of Medical Sciences *Geert Grooteplein 10*
- 15 Faculty of Science *Heyendaalseweg 135*
- 4 Faculty of Law *Montessorilaan 10*
- 5 Faculty of Social Sciences *Montessorilaan 3*
- 6 Nijmegen School of Management *Thomas van Aquinostraat 3*

Addresses of research institutes

- 5 Behavioural Science Institute *Montessorilaan 3*
- 9 Centre for Language Studies *Erasmusplein 1*
- 9 Centre for Parliamentary History *Erasmusplein 1*
- 27 Donders Institute for Brain, Cognition and Behaviour *Kapittelweg 29*
- 15 Institute for Computing and Information Sciences *Heyendaalseweg 135*
- 9 Institute for Historical, Literary and Cultural Studies *Erasmusplein 1*
- 6 Institute for Management Research *Thomas van Aquinostraat 5*
- 15 Institute for Mathematics, Astrophysics and Particle Physics *Heyendaalseweg 135*
- 15 Institute for Molecules and Materials *Heyendaalseweg 135*
- 15 Institute for Water and Wetland Research *Heyendaalseweg 135*
- 9 KASKI *Erasmusplein 1*
- 3 Max Planck Institute for Psycholinguistics *Wundtlaan 1*
- 5 Nijmegen Institute for Social and Cultural Research *Montessorilaan 3*
- 30 Radboud Institute for Health Sciences *Geert Grooteplein 21*
- 30 Radboud Institute for Molecular Life Sciences *Geert Grooteplein 28*
- 6 Radboud Social Cultural Research *Thomas van Aquinostraat 6*
- 4 Research Centres of the Faculty of Law *Montessorilaan 10*
- 9 Research Institute for Philosophy, Religious Studies and Theology *Erasmusplein 1*

Radboud University

Comeniuslaan 4, 6525 HP Nijmegen
Postbus 9102, 6500 HC Nijmegen
(024) 361 61 61
www.ru.nl/english



How to get to the Radboud University?

Train

Trains call at Nijmegen Central train station and Nijmegen Heyendaal train station. Heyendaal train station is within walking distance of the university.

Bus

Direct busses run every five minutes during rush hour from Nijmegen Central train station to Radboud University. Bus 10 (Heyendaal Shuttle) calls at all bus stops. An OV chip card top-up machine is found near the main entrance of the University Library.

Plan your journey via www.ns.nl or www.9292.nl (or use the corresponding phone apps).

Bicycle

Radboud University has different indoor and outdoor bicycle parking facilities. These facilities are found in or near each building on campus.

Car

Radboud University is indicated on the ANWB road signs on all access roads in Nijmegen.

Parking

Paid parking is available from Monday to Friday (except on official holidays) from 7.00 to 18.00 (€2 per hour, maximum €10 per day). Parking up to a half hour is free.

Opening hours and accessibility

Radboud University does not have uniform opening hours across the campus; they vary per building. Visit the website www.ru.nl/howtogetthere for the most current information.