



Erasmus+

EMNano+

Guido Groeseneken

imec

leti

ifw



Technische
Universität
Dresden



Chalmers
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UNIVERSITÉ
Grenoble
Alpes



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- 2-year master programme
- 5 European Universities
 - K.U. Leuven (BE) - coord
 - Dresden University of Technology (DE)
 - University Grenoble Alpes (FR)
 - Chalmers University of Technology, Goeteborg(SE)
 - Universitat Barcelona (SP)

- First year in KUL
 - Common courses + some specialized electives
- Second year in any of the other 3 HEIS (5 different specialisations)
 - Compulsory specialisation courses
 - Broadening electives
 - Final thesis research project

Award of a joint degree to all successful students
Scholarships available for top students !





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Erasmus Mundus

Main achievements

- ✓ **11 generations** of students have graduated from this program, in total about **350 students** coming from **55 countries** around the world
- ✓ Fully integrated with **high level of jointness**: common ISP, application, selection and admission, scoring system, pass/fail criteria, cleanroom training and spring workshop, etc.
- ✓ Joint degrees since 2012 using **joint diploma** and diploma supplements
- ✓ **Industrial Advisory Board** to give advise on content & structure of the program
- ✓ **EUR-ACE accreditation label** received from CTI
- ✓ High number of **non-scholarship students** via various funds and support channels
- ✓ **Spin-offs of the program**: e.g. dual degree agreement of UGA with Tsukuba university Japan, dual degree agreement of KU Leuven with NCTU in Taiwan
- ✓ **EMM-Nano Alumni LinkedIn** networking page active with 174 members
- ✓ Thanks to Erasmus Mundus label and support the program has built-up **strong reputation** worldwide



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Joint Individual Study Program

- ✓ All courses are integrated in the program book of the coordinating university
- ✓ Students select their ISP in the common ISP-database
- ✓ Scores of courses are also fed into the same common ISP system



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Search in KU Leuven

INFO

Intranet

EDUCATION

Erasmus Mundus Master of Science in Nanoscience and Nanotechnology (Leuven et al) (120 ECTS)
Master of Science

Stage1 Stage2

This program can be adapted according to the previous knowledge of the student.

Common Programme

Nanoscience and Nanotechnology Fundamentals

Core Courses

Profiling Elective Courses

General Interest Courses

Graduation Courses

Specializing Courses

Students choose from 5 major graduation options:

- Nanophysics
- Nanochemistry
- Nanoelectronics
- Biophysics
- Bionanotechnology

Option: Nanophysics

Option: Nanochemistry

Option: Nanoelectronics

Option: Biophysics

Option: Bionanotechnology

Broadening Courses

Students choose 15 credits from all courses at their second year location.

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Common scoring and grading system: ECTS-like

	Fail	Sufficient	Good	Very good	Ecellent	Exceptional
Common EMNano+ score	8	11	13	15	17	19
KU Leuven	<10	10-11	12-13	14-15	16-17	18-20
Universite Grenoble Alpes	<10	10.00-11.99	12.00-13.99	14.00-15.99	16.00-17.99	18.00-20
Chalmers (raw score)	<40%	40-59%	60-69%	70-79%	80-89%	90-100%
TU Dresden	5.0	4.0-2.7	2.6-1.8	1.7-1.4	1.3-1.1	1.0
Universitat Barcelona	<5	5.0-5.9	6.0-6.9	7.0-7.9	8.0-8.9	9.0-10

GPA <68% Satisfaction (cum fructu)

GPA between 68% and 77%: Distinction (cum laude)

GPA between 77% and 85%: Great distinction (magna cum laude)

GPA between 85% and 90%: Greatest distinction (summa cum laude)

GPA >90%: Greatest distinction and congratulations of the examination board (maxima cum laude)



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Joint diploma and diploma supplements

KU LEUVEN



Joint degree Erasmus Mundus

We, Rector of the KU Leuven, Belgium, Rector of the Technische Universität Dresden, Germany upon the nomination of the relevant Board of Examiners hereby declare that

Name student

born in City (Country) on date of birth has
been awarded the joint degree of

Erasmus Mundus Master of Nanoscience and Nanotechnology

Master of Science (MSc)

Specialization: Nanoelectronics

Cum laude

This joint degree is in the field of Sciences / Engineering / Bioscience Engineering with a weight of 120 credits and complies with the accreditation and recognition regulations stipulated by the Flemish Code Higher Education, coordinated on 11 October 2013 and with the requirements and regulations of the Technische Universität Dresden. The awarded qualification is situated on level 7 of the Vlaamse Kwalificatiestructuur (VKS – Flemish Qualification Structure), as stipulated in the decree of 30 April 2009 regarding the Flemish qualification structure.

In accordance with article 11.7.6 of the above mentioned Flemish Code Name student is allowed to use the title of "burgerlijk ingenieur".

In testimony thereof we have awarded him/her this degree in accordance with the requirements of the above mentioned Code, in particular article 11.7.1, §1, §2 and §3.

Leuven, 13 October 2016

Professor Rik Torts
Rector

Professor Hans Müller-Stiehnagen
Rector

Professor Giancarlo Ciliberti
TU Dresden Member Examination Commission



The diploma and the diploma supplement are inextricably linked and form one integral entity. Only diplomas printed on paper containing KU Leuven's watermark and hologram and the signature of the Rector of KU Leuven and the Rector of the Technische Universität Dresden and the TU Dresden Member of the Examination Commission are legally valid. The side containing the hologram is the original side, the other side is a translation.

KU LEUVEN



Joint degree Erasmus Mundus

Wir, Rector van de KU Leuven, België, Rector van Technische Universität Dresden, Duitsland, verklaren, op advies van de bevoegde examencommissie, dat

Name student

geboren te City (Country) op date of birth
de graad heeft behaald van

Erasmus Mundus master in de nanowetenschappen en de nanotechnologie

Afstudeerichting nanoelectronica
met onderscheiding

Dies gemeinsame Ausbildung ist in der Studiengruppe Wissenschaften / Technologische Wissenschaften / Biowissenschaften, hat ein Studienumfang von 120 ECTS-Punkten und entspricht den Anforderungen der Flemish Code Higher Education, koordiniert am 11. Oktober 2013 und mit den Anforderungen und Regelungen der Technischen Universität Dresden. Die verliehene Qualifikation ist auf der Ebene 7 der Vlaamse Kwalificatiestructuur (VKS – Flemish Qualification Structure), wie in dem Dekret vom 30. April 2009 über die flemische Qualifikationsstruktur, festgelegt.

In Übereinstimmung mit Artikel 11.7.6 des oben genannten flämischen Codes ist Name Student befähigt, den Titel "burgerlijk ingenieur" zu verwenden.

In Zeugnis hierfür haben wir ihm/ihr diesen Grad in Übereinstimmung mit den Anforderungen des oben genannten Codes, insbesondere Artikel 11.7.1, §1, §2 und §3, verliehen.

Leuven, 13 Oktober 2016

Professor Rik Torts rector
Professor Hans Müller-Stiehnagen rector
Professor Giancarlo Ciliberti TU Dresden Member Examination Commission

Das Diplom und das Diplom-Supplement sind untrennbar verbunden und bilden ein gemeinsames Dokument. Dieses Dokument ist ohne die Original-Unterschrift des Rektors der KU Leuven, des Rektors der Technischen Universität Dresden und des Mitglieds der Prüfungskommission der TU Dresden sowie ohne das Wasserzeichen und das Hologramm der KU Leuven nicht gültig.

Joint degree Erasmus Mundus
Aufgrund der bestandenen Masterprüfung im gemeinsamen Masterprogramm
Nanoscience and Nanotechnology wird

Name student

geboren in City (Country) am date of birth
der akademische Grad

Master of Science

Erasmus Mundus Master of Nanoscience and Nanotechnology

Spezialisierung Nanoelectronics
cum laude

verliehen.

Dieses gemeinsame Abschluss mit einem Ausmaß von 120 ECTS wird der Studiengruppe Sciences / Engineering / Bioscience Engineering (Flemish Code) zugeordnet und entspricht den Anforderungen der Flemish Code Higher Education, koordiniert am 11. Oktober 2013 und mit den Anforderungen und Regelungen der Technischen Universität Dresden. Die verliehene Qualifikation entspricht dem Niveau 7 des Dekrets vom 30. April 2009 über die flemische Qualifikationsstruktur (VKS – Flemish Qualification Structure).

Gemäß Art. 11.7.6 des flämischen Hochschulgesetzes vom 11. Oktober 2013 kann Name Student den Grad "burgerlijk ingenieur" führen.

Zur Zeugnis dessen wurde ihm/ihr dieser Grad im Rahmen der Anforderungen im oben erwähnten Code, speziell Artikel 11.7.1, §1, §2 und §3, verliehen.

Leuven, 13 Oktober 2016

Professor Rik Torts rector
Professor Hans Müller-Stiehnagen rector
Professor Giancarlo Ciliberti Prüfungskommission

Das Diplom und das Diplom-Supplement sind untrennbar verbunden und bilden ein gemeinsames Dokument. Dieses Dokument ist ohne die Original-Unterschrift des Rektors der KU Leuven, des Rektors der Technischen Universität Dresden und des Mitglieds der Prüfungskommission der TU Dresden sowie ohne das Wasserzeichen und das Hologramm der KU Leuven nicht gültig.

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Accreditation

- Accreditation at national level
- 2015-2016 external evaluation by the French accreditation organization for engineering education CTI (Commission des Titres d'Ingénieur)
 - member of ENQA (European Association for Quality Assurance in Higher Education)
 - registered in EQAR (European Quality Assurance Register) since 2010
- EMM-Nano received the EUR-ACE label valid from 01/09/2016 until 31/08/2022 granted by the European Network for Accreditation of Engineering Education (ENAAEE)



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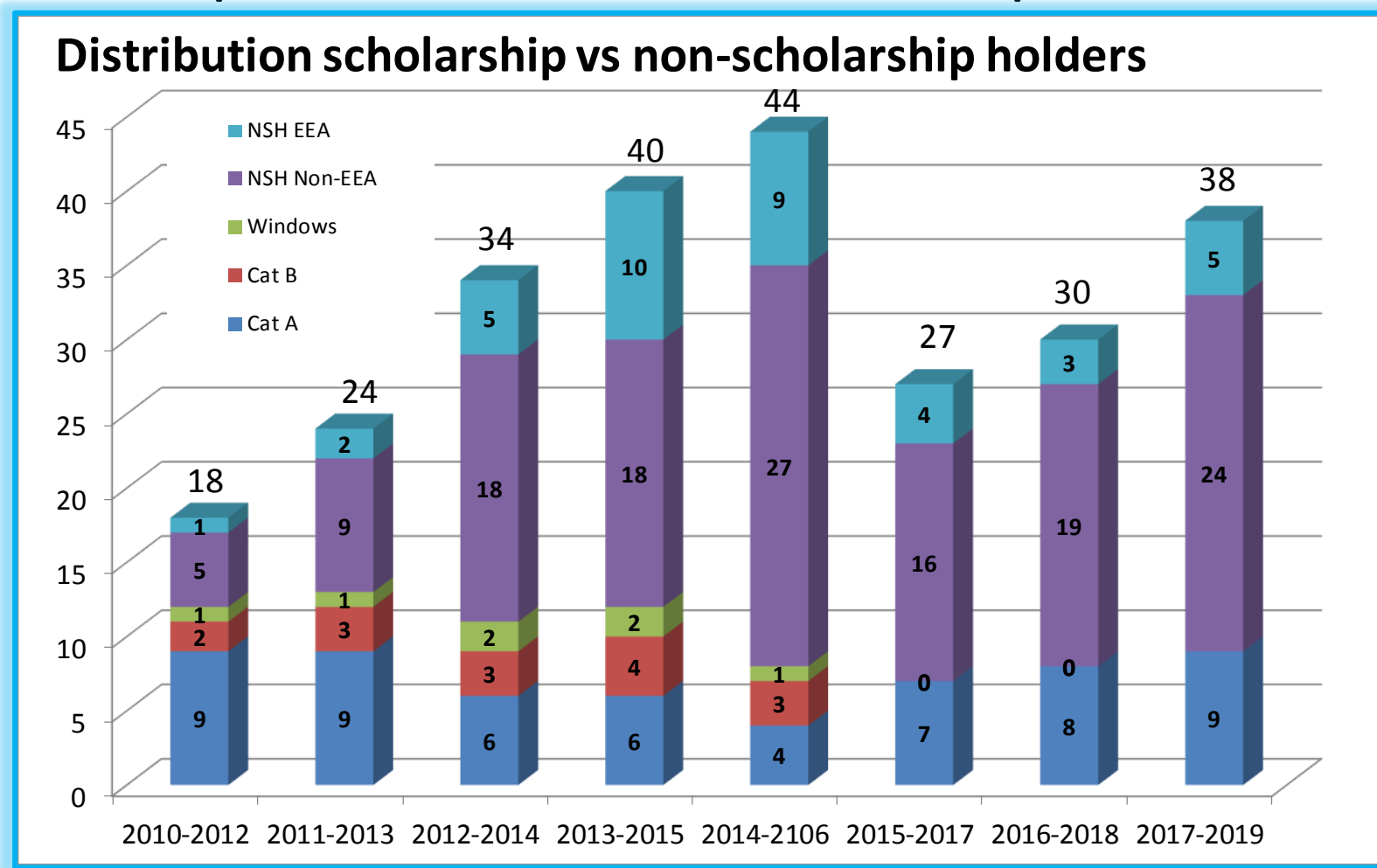
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Scholarship vs Non-scholarship students





Funding mechanisms for NSH students

- **external** student scholarships (e.g. CONACYT Mexico, Taiwan, Vietnam, Indonesia, etc.)
- financial support from imec that funds limited number of **consortium scholarships** per year
 - 1000 Euro travel, 600 Euro/month for non-EU students
 - 1000 Euro travel + 500 Euro/month for 1 year for EU students
- number of extra scholarships for 2nd year students from **IDEX Université Grenoble Alpes**
- **tuition fee waivers** by the universities (except Chalmers)
- **Self-supporting** students



Spring workshop

- Annual meeting of all students and coordinators
- Give practical information about the program to ALL students
- Feedback from the students about the program and the curriculum
- 1st year students follow cleanroom training
- 2nd year students present results of their thesis
- Informal occasion to get together and fraternize or sisternize with all students and coordinators !



2008



2009



2010



2011

EMM Nano 2012 @Grenob...



2013



2014



2015



2017



2016



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Spin-off: Dual degree UGA with Tsukuba signed 12 September 2017



- Dual degree agreement between UGA and Tsukuba in 2017
- Common nanolaboratory between Institut Neel and Tsukuba in 2016, including projects in magnetism and superconductors.



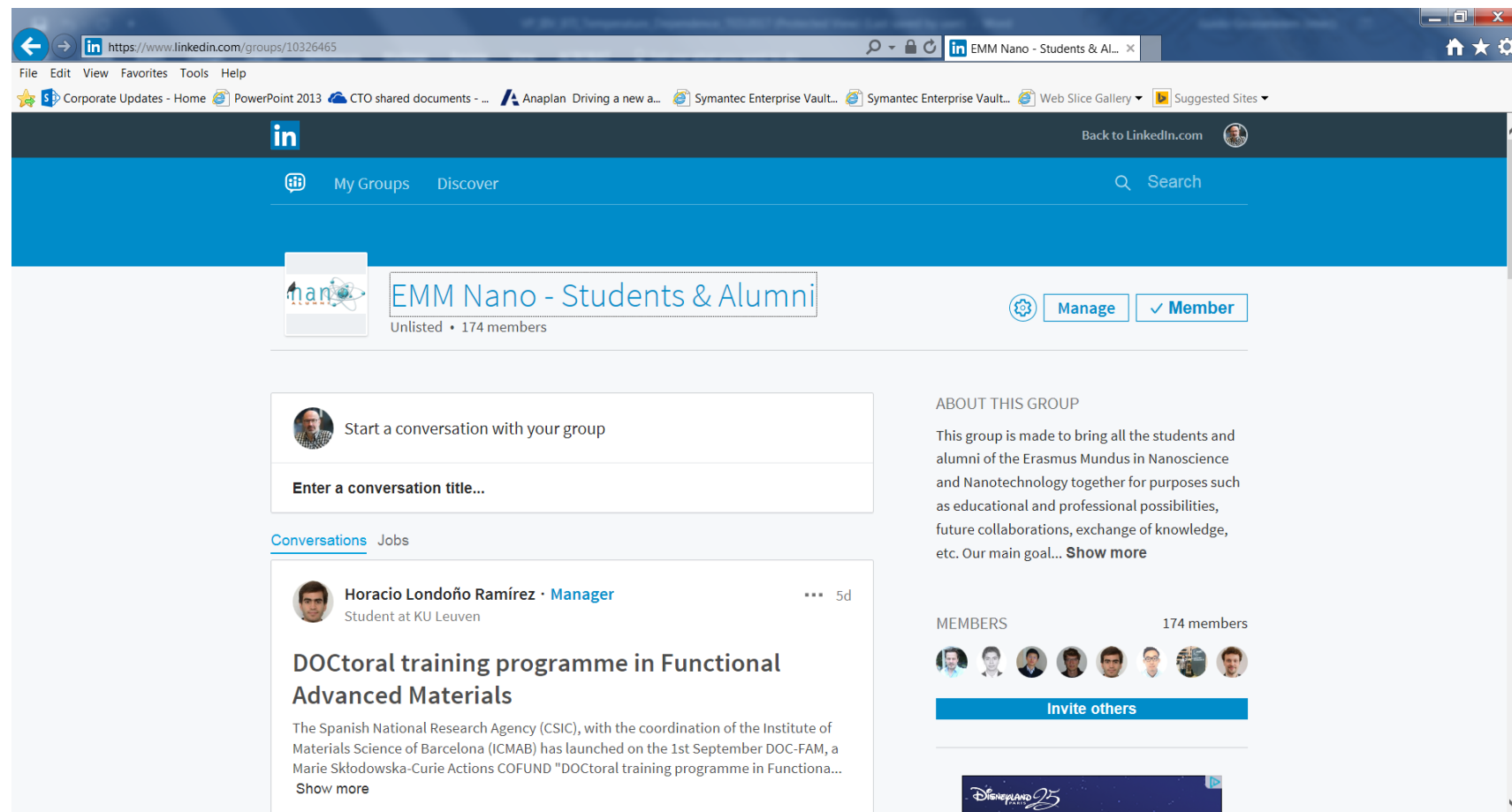


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EMM Nano Alumni network

- 174 alumni students networked in new EMM Nano Alumni LinkedIn
- Regular announcements on job or PhD opportunities
- Investigated status of Alumni employment



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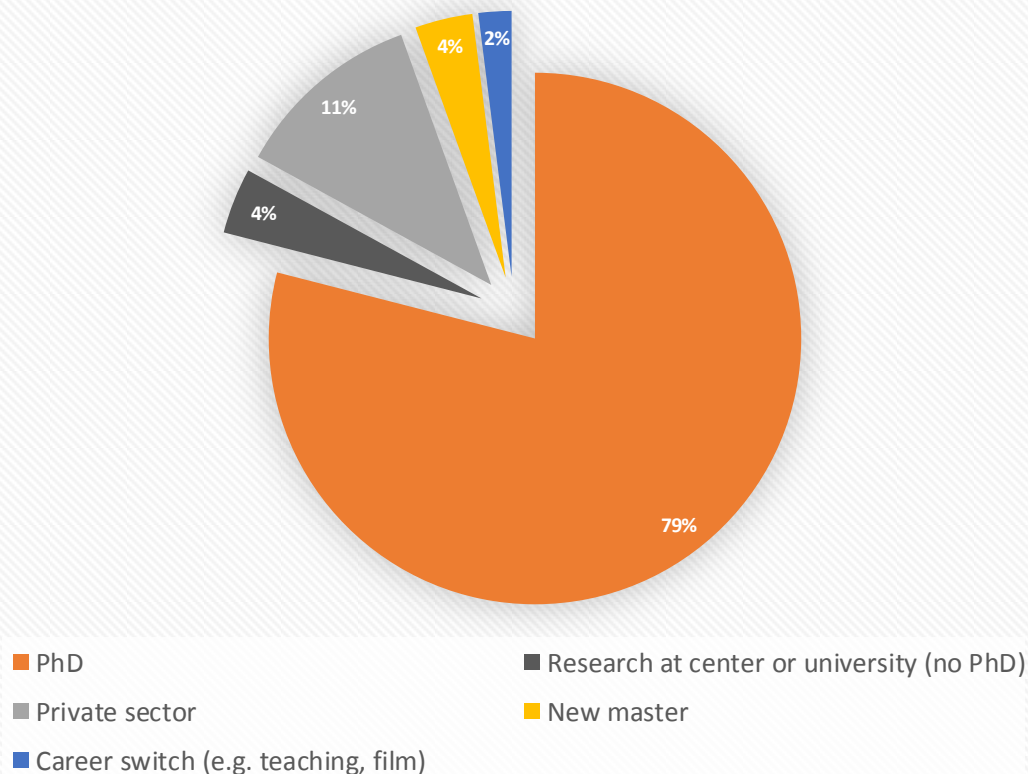


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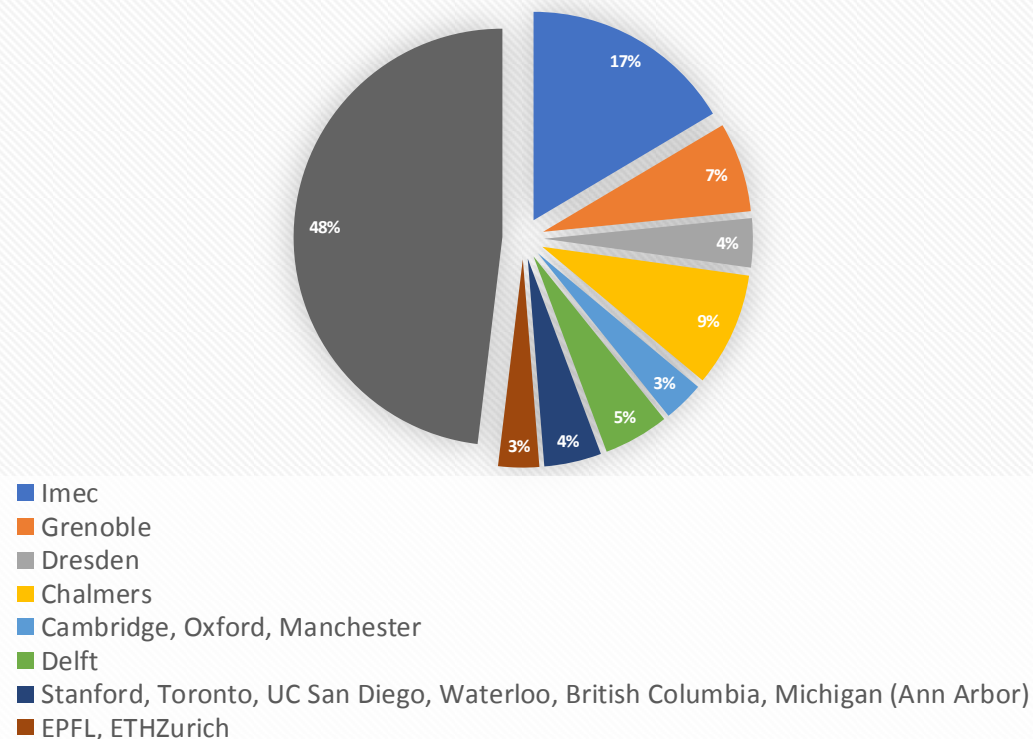


Alumni status: one year after graduation

What do the students do just after graduating ?



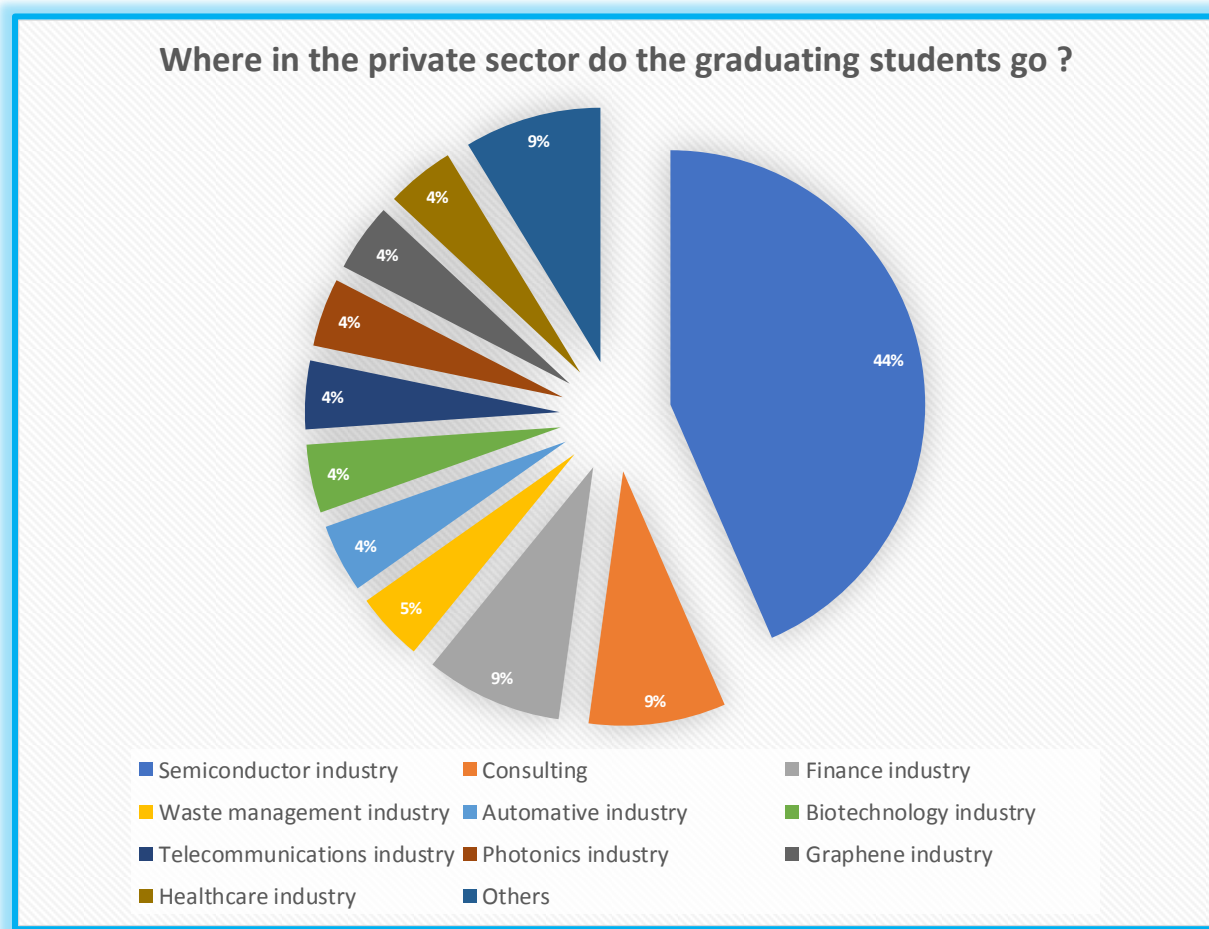
Most popular universities/research centers for PhD's?



Based on a sample of 200 alumni (batch of '15-'17 and '16-'18 not included)



Alumni status: popular industries just after graduation



This pie is only an indication as the sample contains only 23 alumni

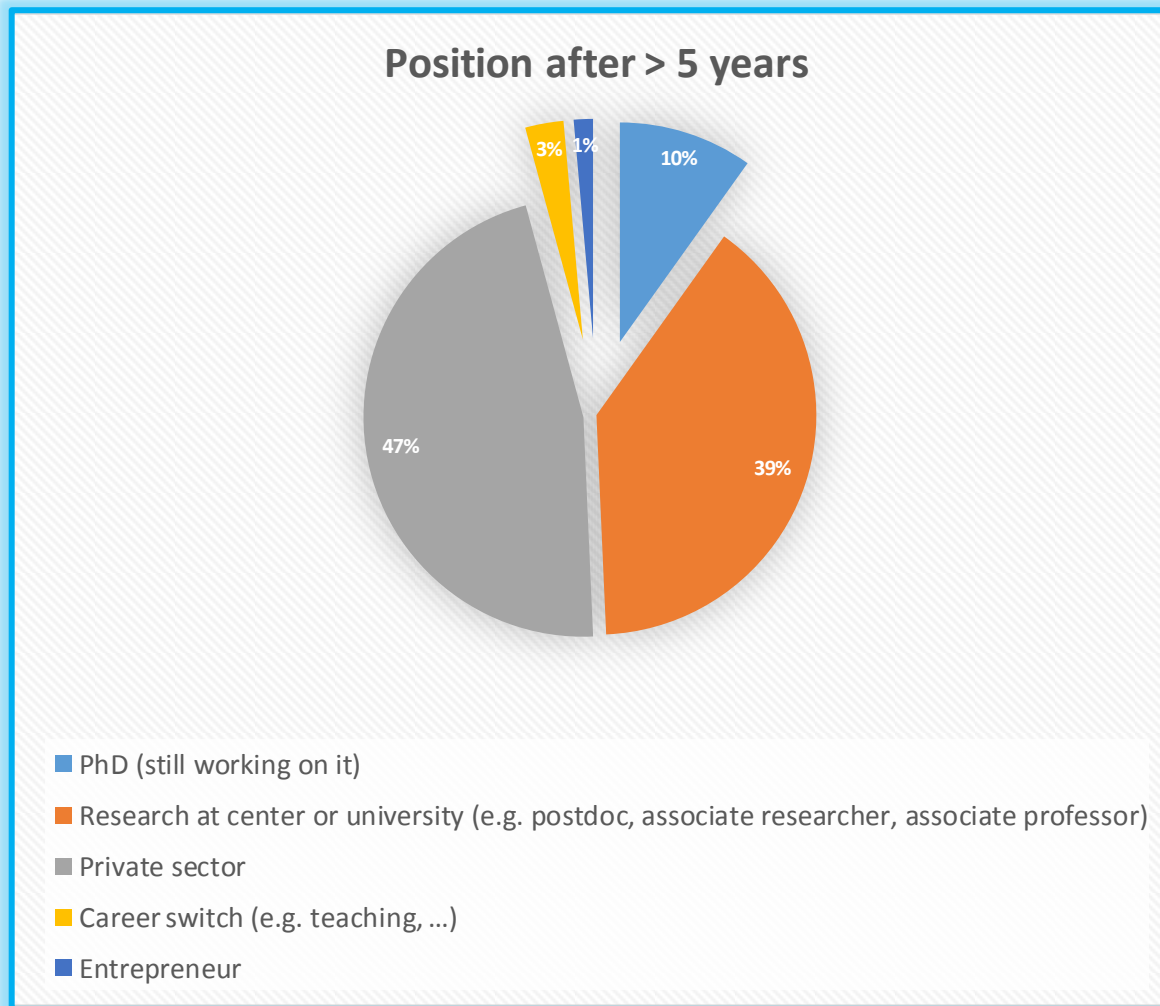
Examples of companies are:
ASML, Mapper lithography,
samsung, IBM,
STMicroelectronics, Illumina,
Accenture, Boston Consulting
group, Qualcomm, Huawei,
SiFotonics



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Alumni status: where are the alumni after 5 years or more?



39% in research institute
or university
47% in private sector

Based on a sample of 71
alumni



Difficulties to be solved

- Align different rules and regulations at partner universities: pass/fail, retakes, scoring system, master thesis, grades, diploma & DS, etc.
- Need for strong support from academic authorities to allow deviations from local rules
- Different accreditation legislation and timeframe: European approach is needed!
- Problems with visa: visa issued per country and per year, why not 1 visa for Schengen for 2 years of study?



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Importance of “Success story” label

- Promotion and dissemination of the program for future application
 - Factsheet
 - Movie
- Additional quality label next to EMM and Eur-ACE labels
- Advertisement for the partner universities and for European Higher Education worldwide
- Ambassador for the success of the Erasmus+ and Erasmus Mundus programs in the world !



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