


EUROPEAN COMMISSION
DIRECTORATE GENERAL
Joint Research Centre




Joint Research Centre

Teaching Metrology in Chemistry in the Academia

AcadeMiC


*Institute for Reference Materials and Measurements (IRMM)
Geel, Belgium*

<http://www.irmm.jrc.be>
<http://www.jrc.ec.eu.int>



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TrainMiC

Training in Metrology in Chemistry

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The mission of IRMM is the promotion of a common European measurement system in support of EU policies

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Directives requiring measurements for implementation

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- Design EC
- Adopt EU & National
- Implement equivalently across EU National
- measurement National

Crucial link between directive and implementation uniform implementation across EU

competent people
↓
Training

- Competent labs in the member states
- Competent national accreditation body
- Competent national reference labs

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- European Commission-funded training platform
- to foster advanced professional training
- on generic issues related to MiC
- intended for laboratory practitioners and various end-users such as regulatory, inspection and accreditation bodies.

- Triggered by the need existing in the Candidate Countries
- Started in Feb. 2001
- Offered through working groups, seminars or training sessions
- to scientists from laboratories, universities, ministry officials, staff from enforcement bodies and industry

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TrainMiC (continued)

KPI, till yesterday =

- 31 training sessions organised
- in 12 countries:
BE, BG, CYP, CZ, EE, HU, LIT, PL, RO, SLK, SLO, TR
- over 1400 participants
- ready to be exported to Balkans & EuroMed (& EU15)

- Core training material developed (cf. next slide), incl. Bibliography and glossary
- ➔ Report EUR 20841 EN / ISBN 92-894-6238-8
- Selection of National Trainers (native speakers)
- Course material translated in various languages
BG, RO, PL (done) / CZ, SLO, TUR (ongoing)

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A modular structure


ISO - 17025

- Metrology in Chemistry
- Uncertainty Budget
- Statistics
- Validation
- Traceability
- Use of CRMs
- Inter-Laboratory Comparison
- Practical Exercises (GUM, Validation)
- other modules to come

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From

TrainMiC
Training in Metrology in Chemistry

To

AcadeMiC

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It is for students

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In stead of only training practitioners in

- Metrology
- Metrology in Chemistry
- Good Laboratory Practices
- Quality Management

we could also teach these concepts to students
to strengthen their capacity to compete on the
job market

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Facts

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- Many MiC concepts are already taught at Universities
- BUT, in fairly scattered way → diluted information
- concepts are “heard”, but not systematically correlated

- Bologna Treaty
- minimal requirement = 8h in MiC @ Bachelor level
- *ca. 250 slides.*

Should a set be prepared?
As example? To be used as such?

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Vision & Mission

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We want AcadeMiC to be an open European network of analytical chemistry professors propagating at Universities and Technical Schools sound metrological and quality management principles.

Our purpose is to bring together academic analytical chemistry teachers and assist them in setting up appropriate MiC curricula and help in exchanging suitable educational course materials.

This will foster across the EU the provision of high level education in MiC to chemistry students. It will bring educated and well prepared people on the job-market thus strengthening the measurement infrastructure.

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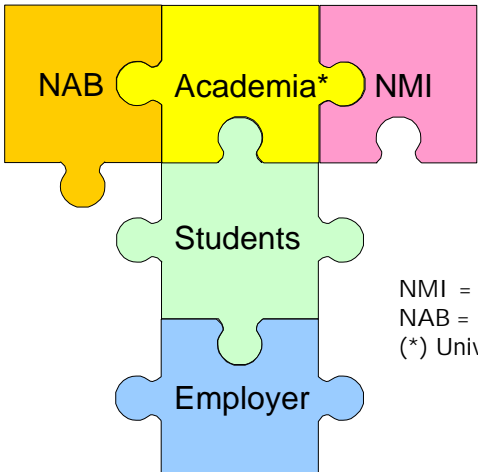
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Minimal Components

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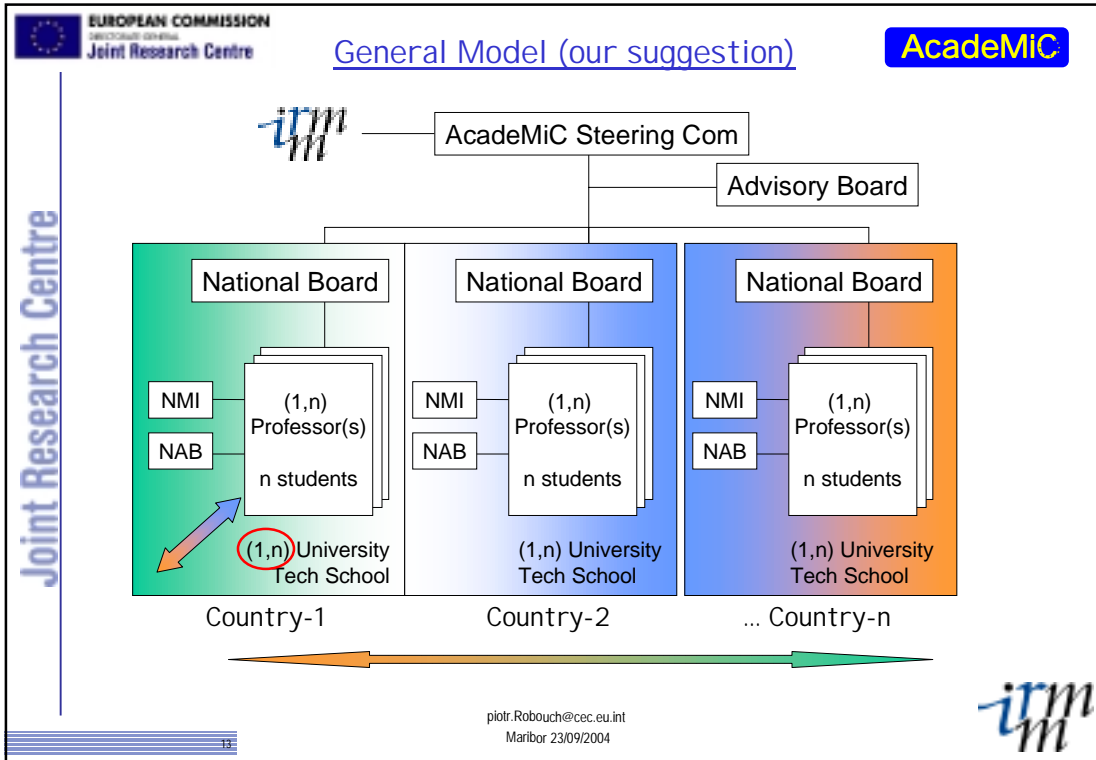


NMI = National Metrology Institute
NAB = National Accreditation Body
(*) University or Technical-Schools

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It's a Network

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Collaboration between

- Academia - NMI - NAB (in the country)
- different Universities (within, between countries)
- various Professors/lecturers (idem)

I.e. Exchange* of

- Best practice in MiC
- Lecturers from Academia - NMI - NAB
- Course Modules
- Students
- Experiences / problems-solutions

(*) within, between countries

➡ **A-MiC Workshop**

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No Financial support foreseen*

(* *excl. Workshop*)

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3 types of Curricula

- A-MiC B = Bachelor (*ca. 15 h*)
- A-MiC M = Master (*ca. 60 h*)
- A-MiC PG = Post Graduate (*ca. 90 h*)

**CNS Provide Specification
for minimum requirements
of course content
[theory + practicum]**

**Review Process for
Assessment of the Courses**

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Acad MiC = Quality Level



- Strong resistance
- Who are you to "audit/assess"?
- Why should I undergo a review?

delayed

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Different scenarios for
improving MiC education ?

- 1) Maximum entropy : 'do as you please'
- 2) Share experience across EU : lot of people
with similar problems, common interest
- 3) Courses with a defined pedigree :
accreditation route

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1) Maximum entropy :
'do as you please'



- Freedom : academic, regional, ...
- no constraints, no extra work



- Not guaranteed quality
- heterogeneous educational messages

present situation ?

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3) courses with a defined pedigree :
accredited MiC courses



- Evolution in accordance with Bologna
- standardised education
- Good quality education



- Time consuming
- financing
- administrative burden (documentation, quality system...)

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2) share experience across EU : how to do this ?

- Bring together academics (open membership) that are
 - involved in teaching analytical chemistry & MiC
 - both those experienced in teaching MiC and novices
- **organise workshops** (in collaboration with EURACHEM E&T)
- show and/or share educational tools
- share experience on how to prepare students in a better way for job market
- share experience on how to defend/convince such activities within your university/country

2) share experience across EU (2)



- Improvement/evolving towards homogenisation
- more efficient : easier to exchange information, possibility to exchange people (students, lecturers)
- could assist you to introduce this type of course in your country
- little administrative burden
- very little organisational infrastructure



- Insufficient for accreditation

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a European information platform
to improve the education in
metrology in chemistry at universities
and technical high schools

To start = series of Workshops

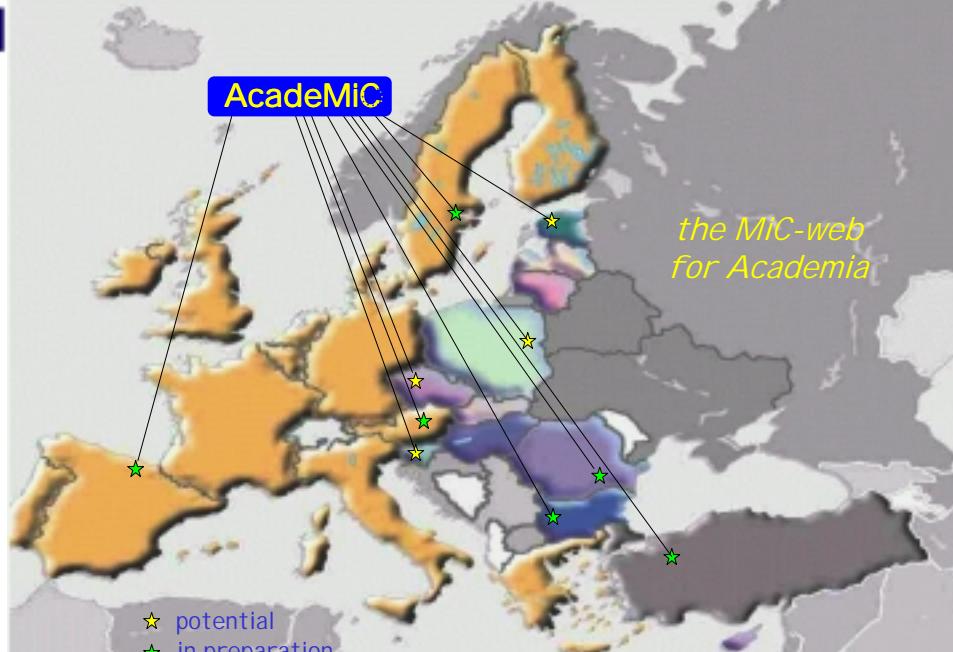
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*the MiC-web
for Academia*

★ potential
★ in preparation

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