

# MSCA Postdoctoral Fellowship with Non-Academic Placement



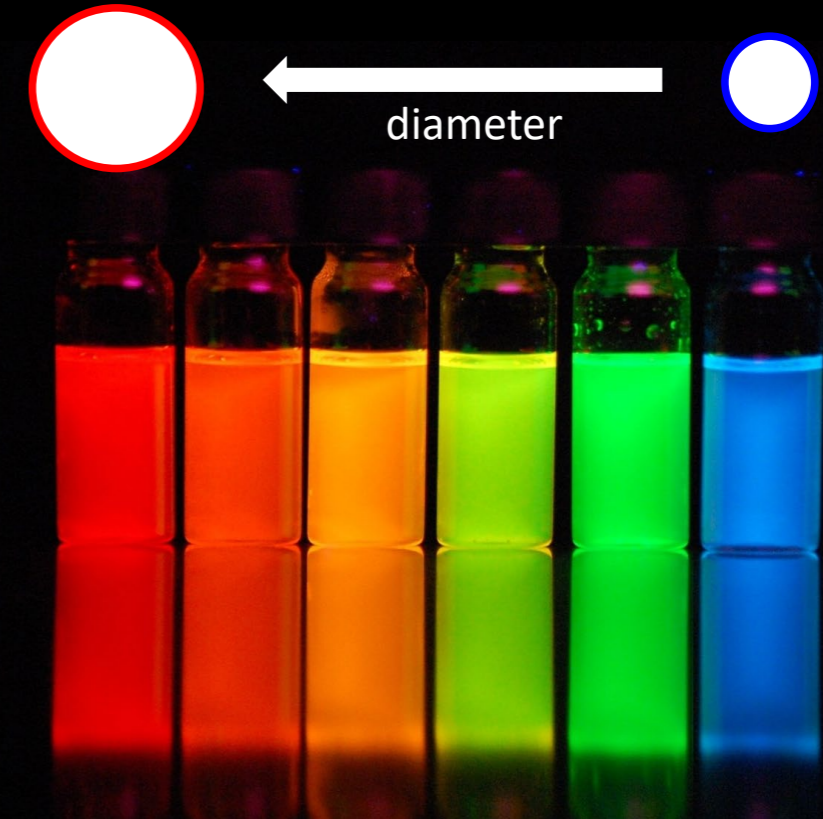
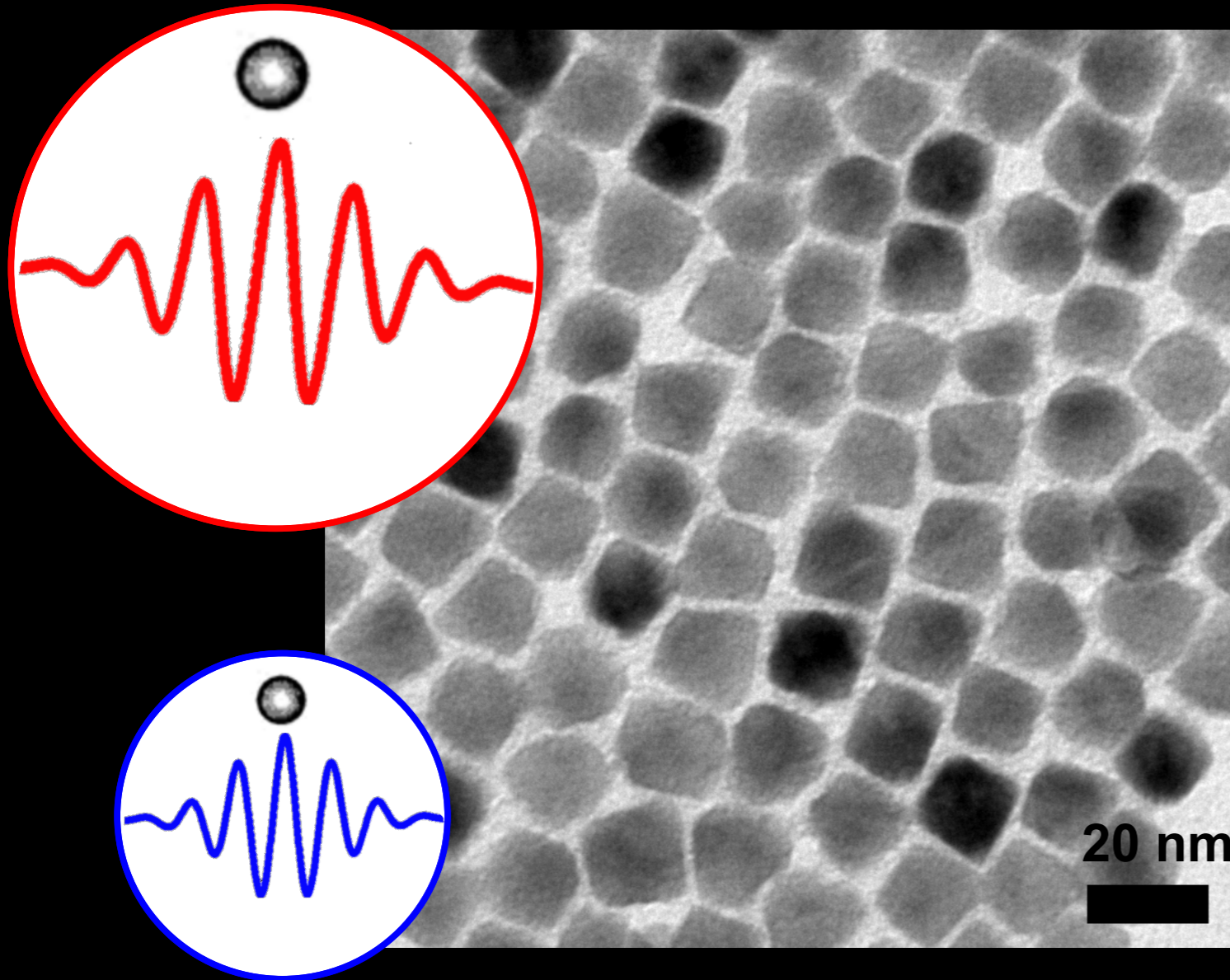
Iwan Moreels

Physics and Chemistry of Nanostructures

Department of Chemistry, Ghent University, Krijgslaan 289 Building S3, 9000 Gent, Belgium.

# Nanocrystal Research at Ghent University

Colloidal semiconductor nanocrystals or **quantum dots**

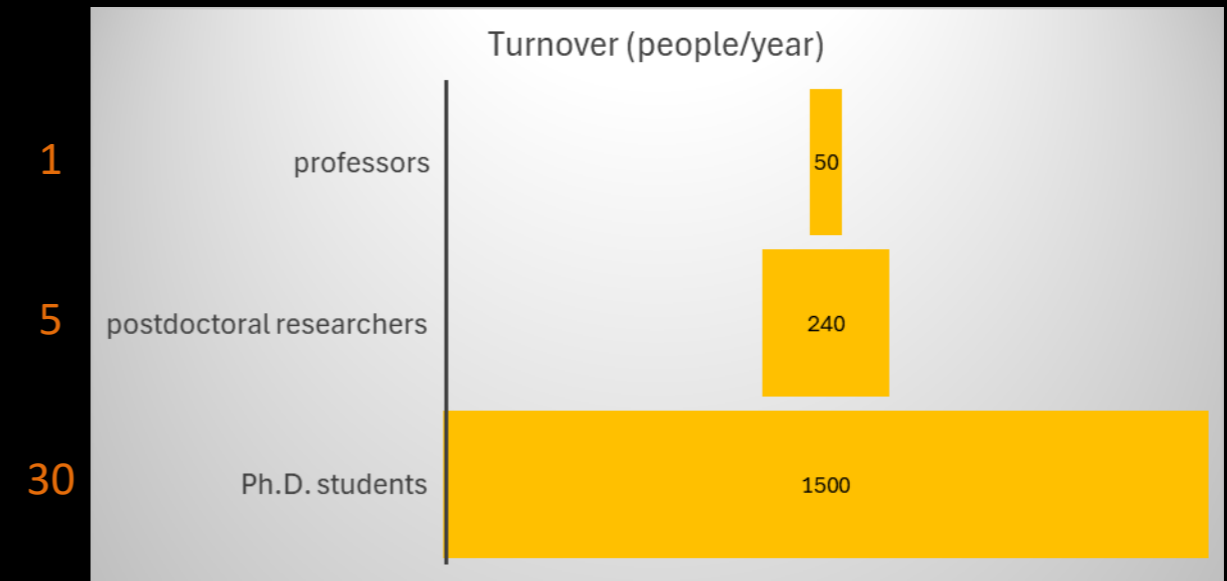
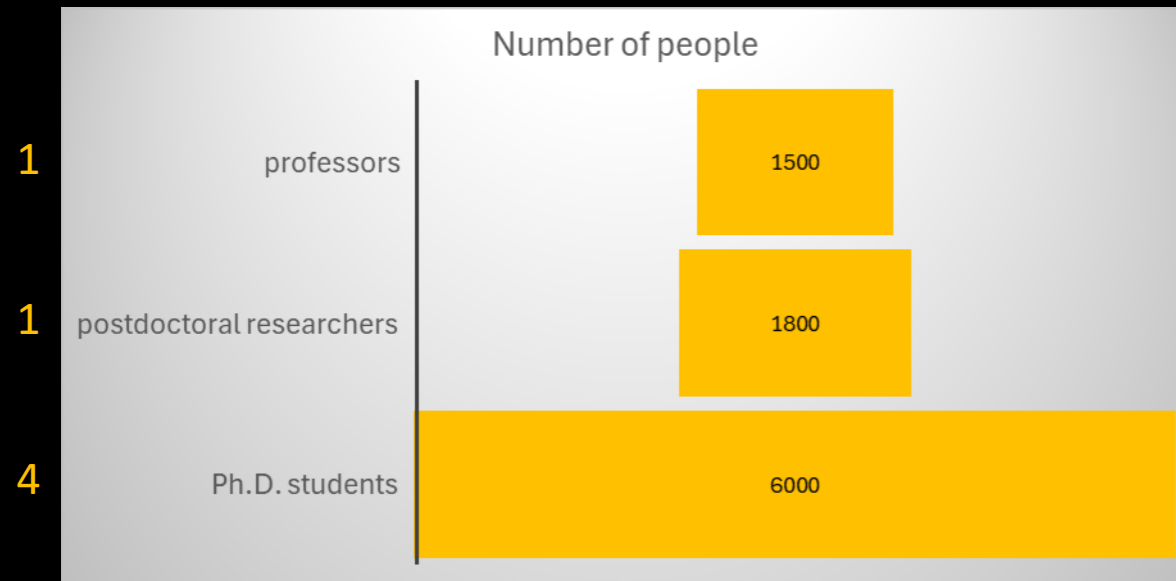


Fellowship **step 1**: contact a **suitable host**  
Match between personal skills and those of supervisor

# Research Pyramid

On the importance of **diversifying** your **research skills**

UGent staff pyramid



**One in six** Ph.D. students becomes postdoctoral researcher.

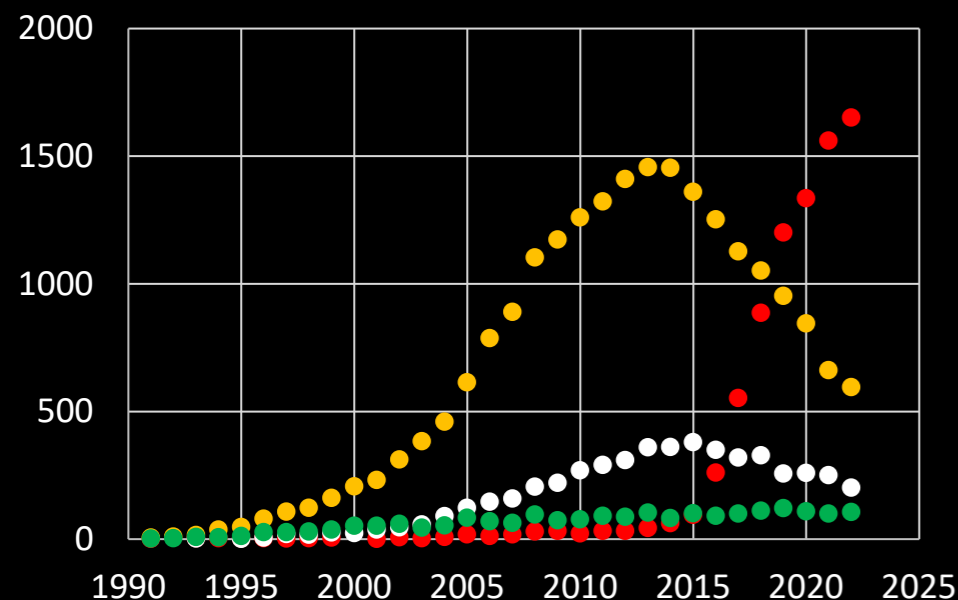
**One in five** postdocs becomes (permanent) academic staff.

Technologically advanced **R&D positions in industry** are an attractive career path.

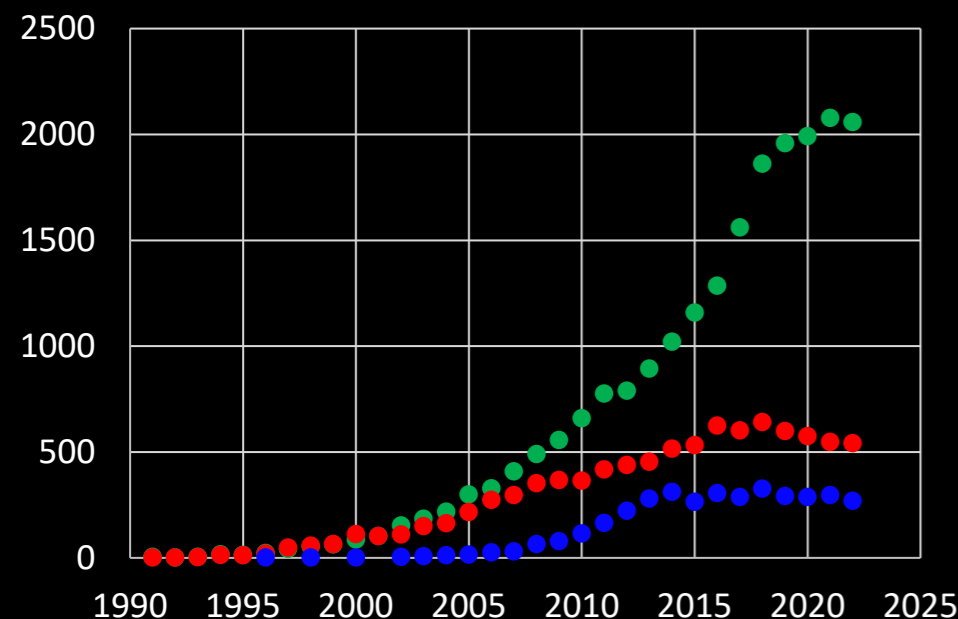
**MSCA Fellowship** as stepping stone for non-academic career.

# Nanocrystal Technology

Number of publications



- Perovskite Nanocrystals
- II-VI Nanocrystals
- IV-VI Nanocrystals
- III-V Nanocrystals



- LEDs
- Lasers
- Solar Cells - Photodetectors

**EU legislation:** Restriction of Hazardous Substances in consumer electronics  
Prohibition on the use of **cadmium, lead and mercury**

Samsung **QLED** based on **InP nanocrystals**

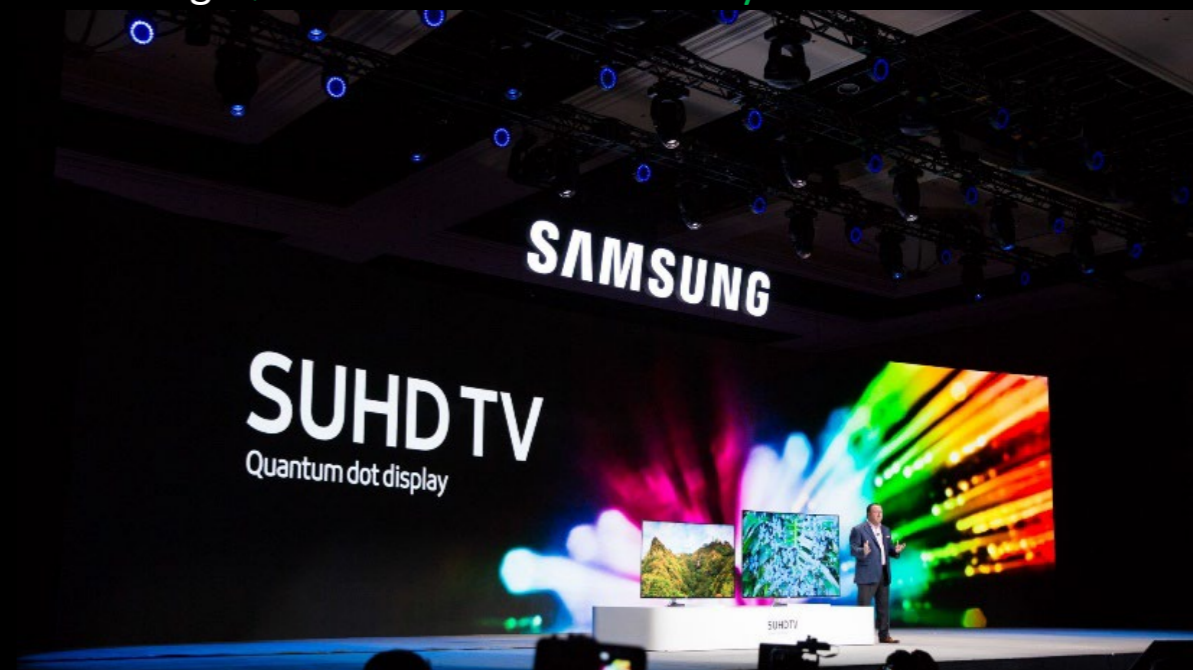


Foto: Samsung Newsroom, License [CC BY-NC-SA 2.0](#)

Displays: high-impact **commercial application** of colloidal nanocrystals

Fellowship **step 2:** discuss a **suitable industrial placement**

# Nanocrystal Technology at Ghent University

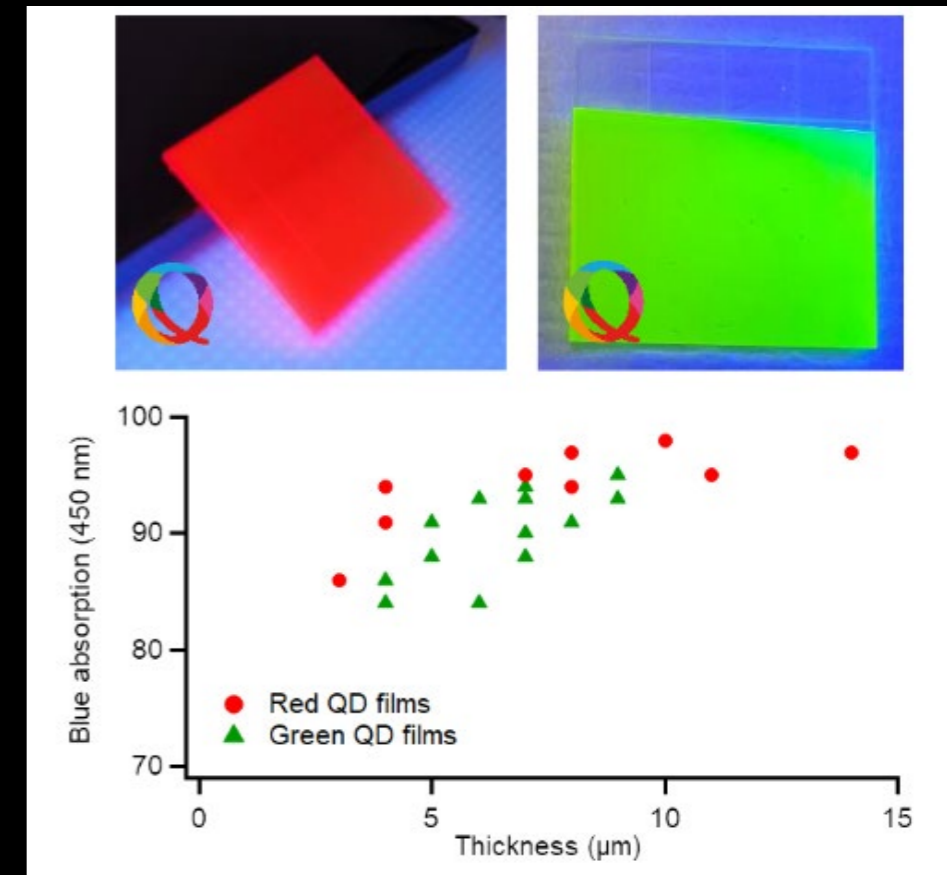
Ugent Technology transfer

Number of spin-offs: 88 (2014-2024)

UGent spin-off QustomDot



## A Path to Brighter Horizons



RoHS-compliant InP nanocrystals for displays

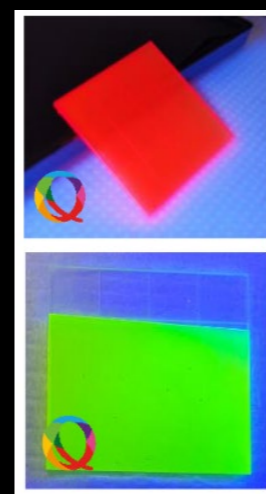
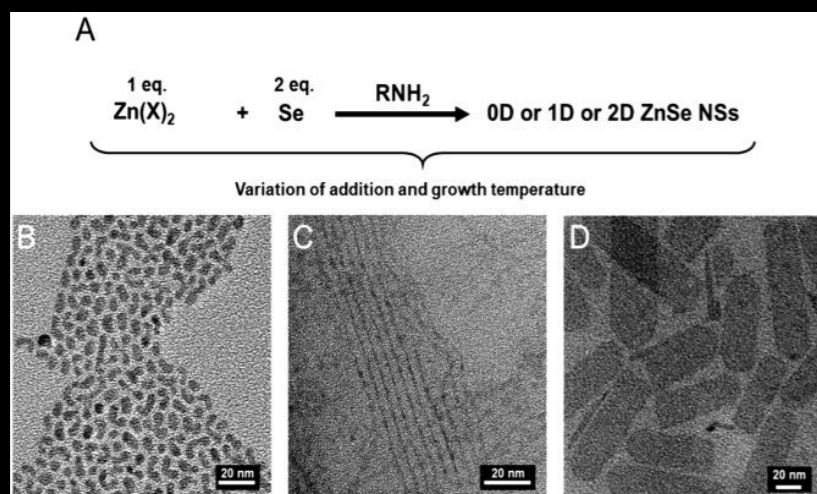
<https://www.qustomdot.com>

# Nanocrystal Technology at Ghent University

Fellowship **step 3**: **match** the **academic topic** with the **industrial research coherence** of the research proposal

**SYROCO** - Synthesis of **RoHS-Compliant Fluorescent 2D Nanocrystals** for Fabrication of **Display Pixel**

ZnSe/ZnS and ZnTe/ZnS nanoplatelets, to produce vibrant colours in **violet**, **blue**, **cyan**, and **green**.



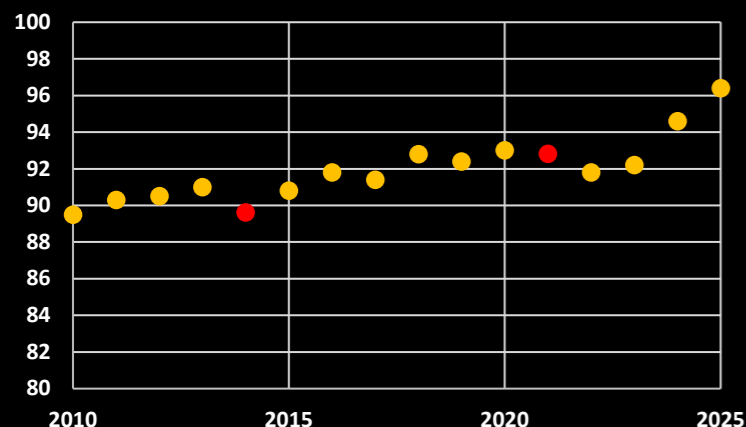
A Path to Brighter Horizons

Before writing, **discuss** with industrial partner scientific work and planned placement.  
Work should be of **interest** for all partners.  
**Share** proposal during writing stage.

# Writing the Proposal

Fellowship **step 4**: start **writing** the proposal

Cut-off CHE



Success rates:  
20% in FP7 and H2020  
15% in Horizon Europe  
**10% in 2025**

## Criterion 1 - Excellence

Score: (Threshold: 0 / 5.00 , Weight **50.00%**)

*scientific skills and expertise*

*Supervisor:  
excellent experience*

*Researcher:  
prior competence*

*scientific activities*

*ambitious*

*achievable*

*background  
and prior art*

*advance the  
state-of-the-art*

*open science  
practices*

*interdisciplinary  
approach*

*scientific  
skills*

***training activities***

*two-way transfer  
of knowledge*

*project  
management*

***industrial non-  
academic placement***

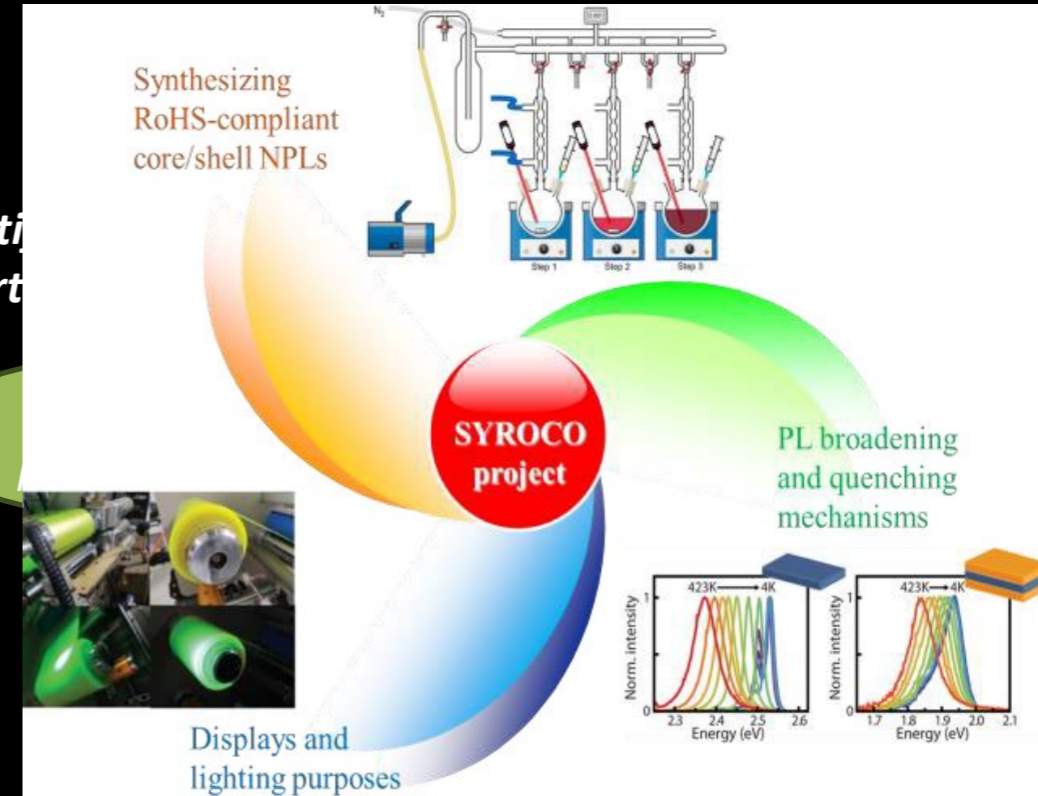
# Writing the Proposal

**Step 4.0:** existing situation  
**Highlight**, be confident

## Step 4.1:

Define your research question – **research objectives**

scientific  
expertise



*advance the  
state-of-the-art*

*interdisciplinary  
approach*

# Writing the Proposal

## Step 4.2: fit the planned work in your timeline

SYROCO	M2	M4	M6	M8	M10	M12	M14	M16	M18	M20	M22	M24
SWP1: Colloidal synthesis and characterization of RoHS-compliant 2D NPLs												
Task 1.1		KMi1										
Task 1.2					KMi2							
SWP2: Understanding PL broadening and quenching mechanisms												
Task 2.1							KMi3					
Task 2.2												
Task 2.3												
SWP3: Fabrication of NPL display pixel												
Task 3.1												
Task 3.2												
QustomDot										KMi4		

*ambitious*

*achievable*

*Include milestones  
and deliverables*

## Step 4.3: write from introduction to outreach

### A-Z writing style

Don't fill sections at random, start from the top  
Overflow and then remove redundant sentences

*background  
and prior art*

*scientific  
skills*

*two-way transfer  
of knowledge*

*project  
management*

*open science  
practices*

*industrial non-  
academic placement*

### The other 50%

#### Criterion 2 - Impact

Score: (Threshold: 0 / 5.00 , Weight: 30.00% )

#### Criterion 3 - Implementation

Score: (Threshold: 0 / 5.00 , Weight: 20.00% )

# Writing the Proposal

## Step 4.4: risk assessment

crucial element in the proposal

Risk no.	SWP no.	Description of risk	Proposed mitigation measure	Likelihood / Impact
R1	1			medium / high
R2	1			high / low
R3	1			medium / high
R4	2			medium / low
R5	2			low / high
R6	3			low / medium

Scientific risks and Training risks

What about relocation, secondments,  
Specific skills to acquire...

# Writing the Proposal

## Step 4.5: **portal data** – scientific area and descriptors crucial element in the proposal

Acronym	SYROCO
Proposal title	Synthesis of RoHS-Compliant Fluorescent 2D Nanocrystals for Fabrication of Display Pixel
<i>Note that for technical reasons, the following characters are not accepted in the Proposal Title and will be removed: &lt; &gt; " &amp;</i>	
Scientific Area	CHE - Chemistry (CHE)
<i>Please select up to 5 descriptors (and at least 3) that best characterise the subject of your proposal, in descending order of relevance.</i>	
Descriptor 1	Nanochemistry
Descriptor 2	Spectroscopic and spectrometric techniques
Descriptor 3	Physical chemistry
Descriptor 4	Optoelectronics
Descriptor 5	Electronic properties of materials, surfaces, interfaces, nanostructures, etc
Free keywords	

determines potential **reviewers**

## Step 4.6: **portal data** – administrative information

Administrative data from applicant  
**Your responsibility**

Administrative data from the host  
**Ask host assistance**

Administrative data from the associated partner  
**Non-academic partner** QustomDot

**Start early on!**

# Grant Agreement



Grant agreement: handled mostly by **HR/projects office**

Funding is fixed

Funding goes entirely to the **host**

**Joint-research agreement** with industrial partner

Work plan (cfr. proposal)

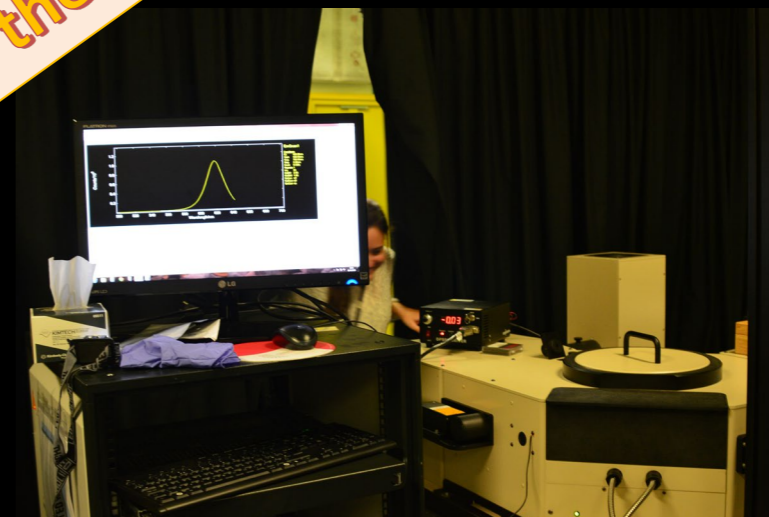
Financial agreements (consumables & other expenses)

Intellectual property management

Confidentiality

Discuss and draft well **in advance** of start of project and agreement.

**All set to begin the project**



# Conclusions

Find a host



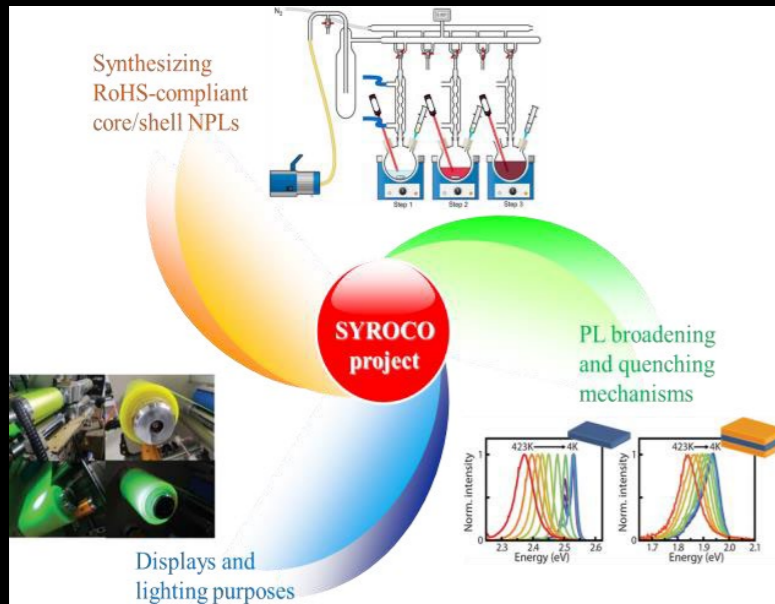
Find a supervisor



Find a non-academic partner



Draft an outstanding proposal



The MSCA fellowship is about

Training



Science

