

The role of Government Agencies and University Research & Innovation Offices in Support for Innovation and Commercialisation of Research in Ireland

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Technological University Dublin

Before commercialisation

Do the research

Decide topic

Background literature study

Preliminary (laboratory?) research – resources?

Funding

- equipment

- personnel

- materials

- duration

- what will you do and why?

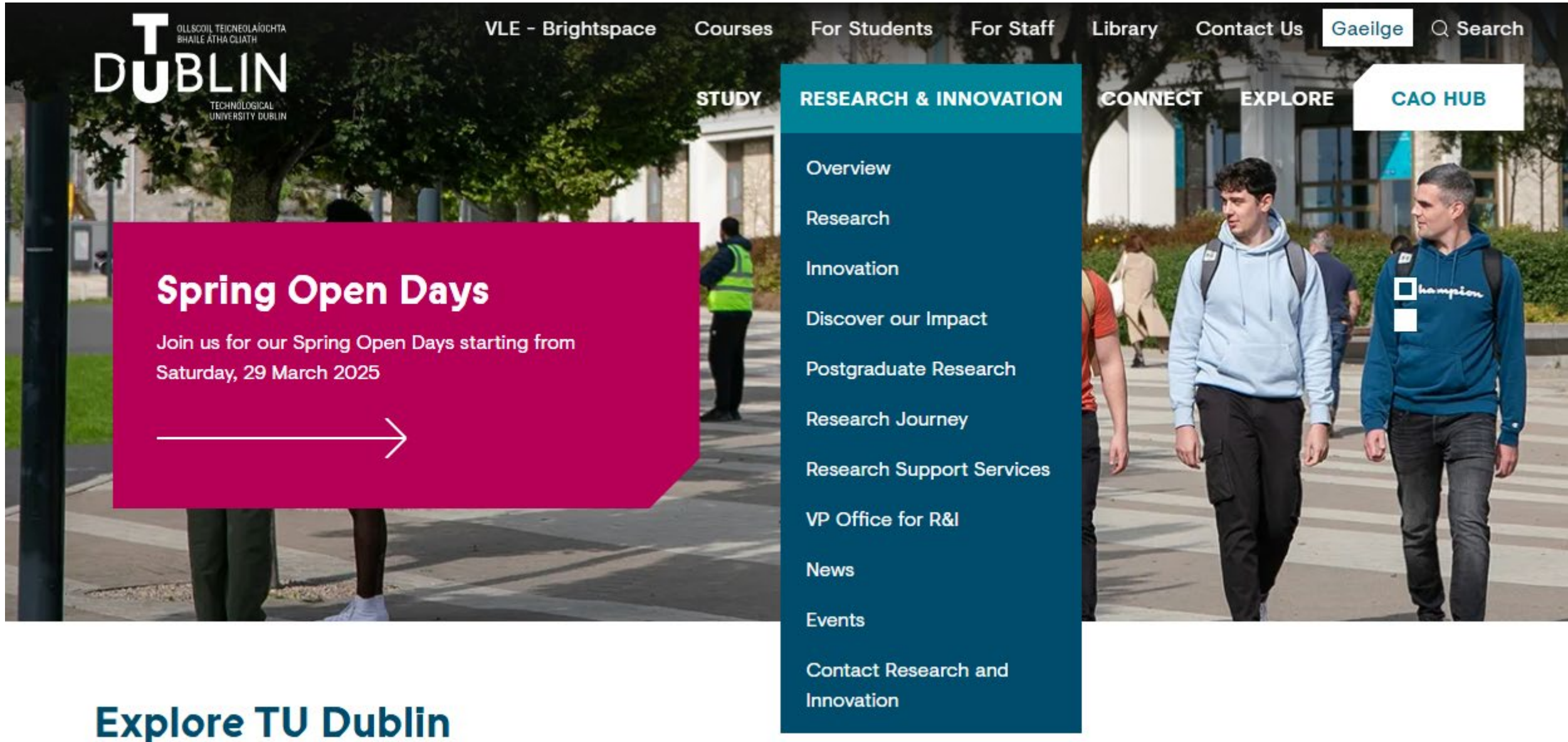
- benefits and beneficiaries

Do the work

Publication

- careful!

All HEIs provide research support Services



The image is a screenshot of the TU Dublin website. The background is a photograph of two students walking on a campus path. The website's header includes the TU Dublin logo (with the Irish name 'Ollscoil Teicneolaíochta Bhaile Átha Cliath' and 'Technological University Dublin') on the left, and navigation links for 'VLE - Brightspace', 'Courses', 'For Students', 'For Staff', 'Library', 'Contact Us', 'Gaeilge', and a search bar on the right. Below the header, there are three main navigation categories: 'STUDY', 'RESEARCH & INNOVATION', and 'CONNECT EXPLORE CAO HUB'. The 'RESEARCH & INNOVATION' menu is expanded, showing a list of links: Overview, Research, Innovation, Discover our Impact, Postgraduate Research, Research Journey, Research Support Services, VP Office for R&I, News, Events, and Contact Research and Innovation. A large magenta banner on the left side of the page reads 'Spring Open Days' and 'Join us for our Spring Open Days starting from Saturday, 29 March 2025', with a white arrow pointing to the right. At the bottom left, the text 'Explore TU Dublin' is displayed.

TU DUBLIN
Ollscoil Teicneolaíochta Bhaile Átha Cliath
Technological University Dublin

VLE - Brightspace Courses For Students For Staff Library Contact Us Gaeilge Search

STUDY RESEARCH & INNOVATION CONNECT EXPLORE CAO HUB

Spring Open Days
Join us for our Spring Open Days starting from Saturday, 29 March 2025

→

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Innovation
Discover our Impact
Postgraduate Research
Research Journey
Research Support Services
VP Office for R&I
News
Events
Contact Research and Innovation

Explore TU Dublin



Home / Research & Innovation / Research

Research Support Services

Research

Research Support Services assist the researcher in all activities from idea generation and funding opportunities to application submission, project set up, award management and open research.

Irish Funding Agencies

Industrial Development Authority

<https://www.idaireland.com/>

Primary concern is Foreign Direct Investment

Financial incentives for investors carrying out R&D in Ireland

Technology sector benefits from Government investment in skills programmes.

Number of STEM graduates per 1,000 is highest in Europe

IDA supports *collaboration between corporations and researchers*

Agencies funding research in HEIs

Research Ireland

<https://www.gov.ie/en/publication/27c78-impact-2030-irelands-new-research-and-innovation-strategy/#key-initiatives>

Established 1st August 2024 as a key action of Impact 2030: Ireland's Research and Innovation Strategy,

Research Ireland is an amalgamation of

Science Foundation Ireland (direct funding for research equipment, materials, infrastructure) and

Irish Research Council (direct funding of research personnel, postgraduate and postdoctoral).

The agency works with higher education institutions and other state agencies including the Higher Education Authority (responsible for universities and institutes of technology), IDA and Enterprise Ireland (more later)

Objectives

- Promote high quality research and innovation in all disciplines by researchers with different levels of knowledge, experience and specialist skills.
- Promote and support the contribution made by research and innovation to economic, social, cultural and environmental development and sustainability in the State
- Strengthen interaction between research and innovation with enterprise and develop the international reputation of the State as a favourable location for undertaking research and innovation

Some of Research Ireland's Programmes

Enterprise Partnership Scheme links researchers to enterprise partners, ranging from multinational corporations to SMEs, to pursue research in collaboration with enterprise while based at an eligible research body - research aligned to company's strategic interests. The scheme provides researchers based in higher education institutions and other research bodies with the opportunity to future-proof their careers by developing new skills linked with industry and employer needs. It also helps to train postgraduate researchers for the diversity of employment opportunities in industry.

Frontiers for the Future Programme - opportunities for independent investigators to conduct high risk, high reward research

Innovate for Ireland - attract research and entrepreneurship talent to Ireland to conduct advanced, multidisciplinary PhD research to address climate, aviation, energy.

ERC Support Programme

Ulysses (Ireland /France) - focus on renewable energy and smart grids

**Engineering and Physical Sciences Research Council (UK)
Research Ireland joint programme**

US-Ireland R&D Partnership Programme

Sensors and Networks
Nanoscience/eng
Telecommunications
Energy & Sustainability
Health
Cybersecurity
Agriculture

Environmental Protection Agency

<https://www.epa.ie/>

Addressing climate change evidence needs

Facilitating a green and circular economy

Delivering a healthy environment

Protecting and restoring natural environment

DOROTHY (DevelOp InterdisciplinaRy ApprOaches to HealTH Crises CollaborativelY) a postdoctoral research programme on public health crises (open to researchers from all disciplines)

Health Research Board

<https://www.hrb.ie/>

to help enhance health and social care practice and address societal challenges in health care through research

Investigator-Led Clinical Trials (ILCT) Programme 2025

Enterprise Ireland

<https://www.enterprise-ireland.com/en/>

Supports

Commercialisation of research

Technology Transfer Office (TTO) in each Higher Education Institute (Universities and Institutes of Technology)

Companies at early stages of development and growth

Enterprise Ireland

Innovation Voucher System

SMEs seeking innovative thinking around business challenges with < 250 employees, annual turnover not > €50m

€10,000 third-level researcher to help develop an idea or product or meet a business or technical challenge

Up to €20,000 co-funding, company contributing 50%

SMEs may avail of a maximum of four vouchers (3 standard, 1 co-funded)

Applicants eligible to apply again for vouchers after five years

A company may have only one active voucher at a time.

Enterprise Ireland

Innovation Partnership Programme

Funding up to €200,000 enabling company to access expertise and resources (usually in a University or IoT) to undertake research towards the development of new and improved products, processes, services, and generate new knowledge and know-how.

Company benefits in terms of growth, the evolution of its strategic research and development and the creation of new knowledge that it can use to generate commercial advantage.

The research institute benefits by developing skills, *intellectual property* and publications

Up to 80% of the cost of research work towards the development of new and improved products, processes or services, or the generation of new knowledge and know-how.

Up to 100% cost of large capital equipment.

Enterprise Ireland

Commercialisation Fund

supports for HEI researchers in translating research into innovative and commercially viable products, services and companies.

Feasibility Grant (€15,000) for an independent industry expert *consultant to conduct a market opportunity assessment* and explore potential *routes to commercialisation* for the technology.

Commercialisation Fund Award provides *significant funding and supports to help researchers* develop, build and validate their technology both technically and commercially using a tailored development plan.

Both are available to third-level researchers based in Ireland

Dedicated Commercialisation Specialist Team

Life sciences

Manufacturing, Engineering, Food and Agtech

ICT

Enterprise Ireland

Technology Transfer Offices (TTOs)

located in HEIs and research organisations help companies and investors to:

access new knowledge and expertise to drive [innovation through research collaboration](#), contracted services and consultancy.

identify and license new technologies and [intellectual property \(IP\)](#) relevant to their business.

access state-of-the-art facilities and equipment.

TTO staff have experience working in multi-nationals and start-ups and assist in

- protecting and managing intellectual property (IP)

- commercial assessment

- contract negotiation and drafting

- company formation and incubation

- finding academic partners for companies

TU Dublin - Hothouse

[TU Dublin Innovation | TU Dublin](#)

Hothouse is TU Dublin's Technology Transfer Office for commercialisation of research and the transfer of technology from TU Dublin to industry

Services

Disclosure form (technical and commercial)

Discussions with patent agent

Support on patent drafting / responses (although largely task of the researcher)

Necessary agreements



Staff & Students

TU Dublin supports staff, students and researchers in developing research ideas and/or protect their inventions.

Things to be done

1. Brief summary prepared by the researcher for TTO

why it's better?

patent search results

stage of development (idea, prototype, field tested),

funding (past, present or future) from state bodies to develop the idea

2. Strategies for
handling Intellectual Property
funding
marketing

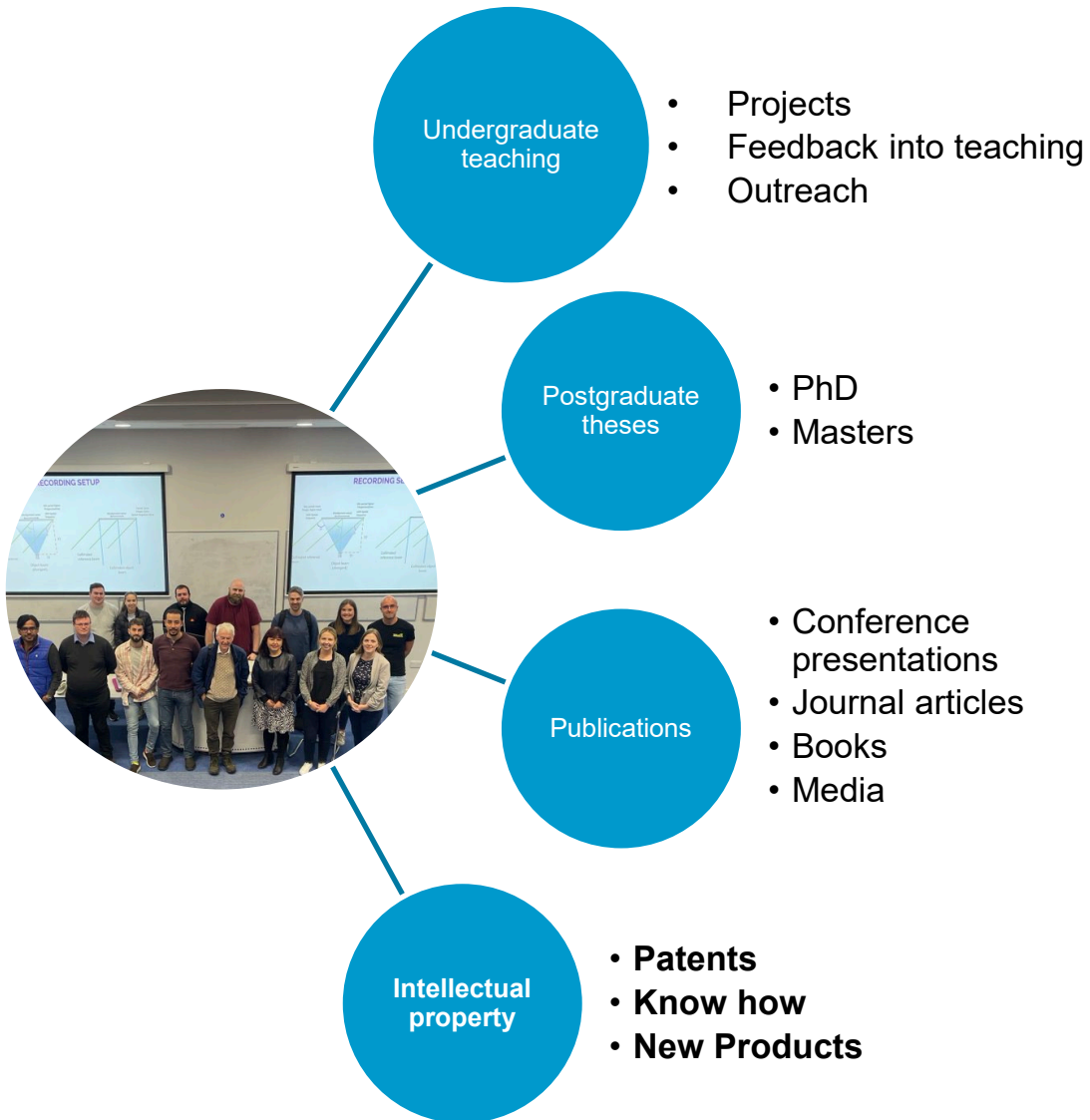
3. TTO and inventor/researcher approach potential *industry partners* who can
provide direction and market validation for the invention,
become a collaborator, possibly funding further development costs

OR

Spin-out

Our own and other experience

Third Level Research context – why research?



General benefits of research

- **Informs curriculum**
- **Generates new ideas and discoveries**
- **Societal benefits**
- **Acquire/develop state-of-the-art equipment and techniques**
- **Generate income for University**
- **Job creation / economic growth**

Benefits of commercially oriented research

- **Applied research – solving real problems**
- **Industry partnerships – understanding needs**
- **Prototype development informs research**
- **Industry PhDs – experience for student**
- **Spin outs – all of the above**

Centre for Industrial and Engineering Optics (IEO)



([Centre for Industrial and Engineering Optics | TU Dublin](#))

Active in optics and holography for >25 years)

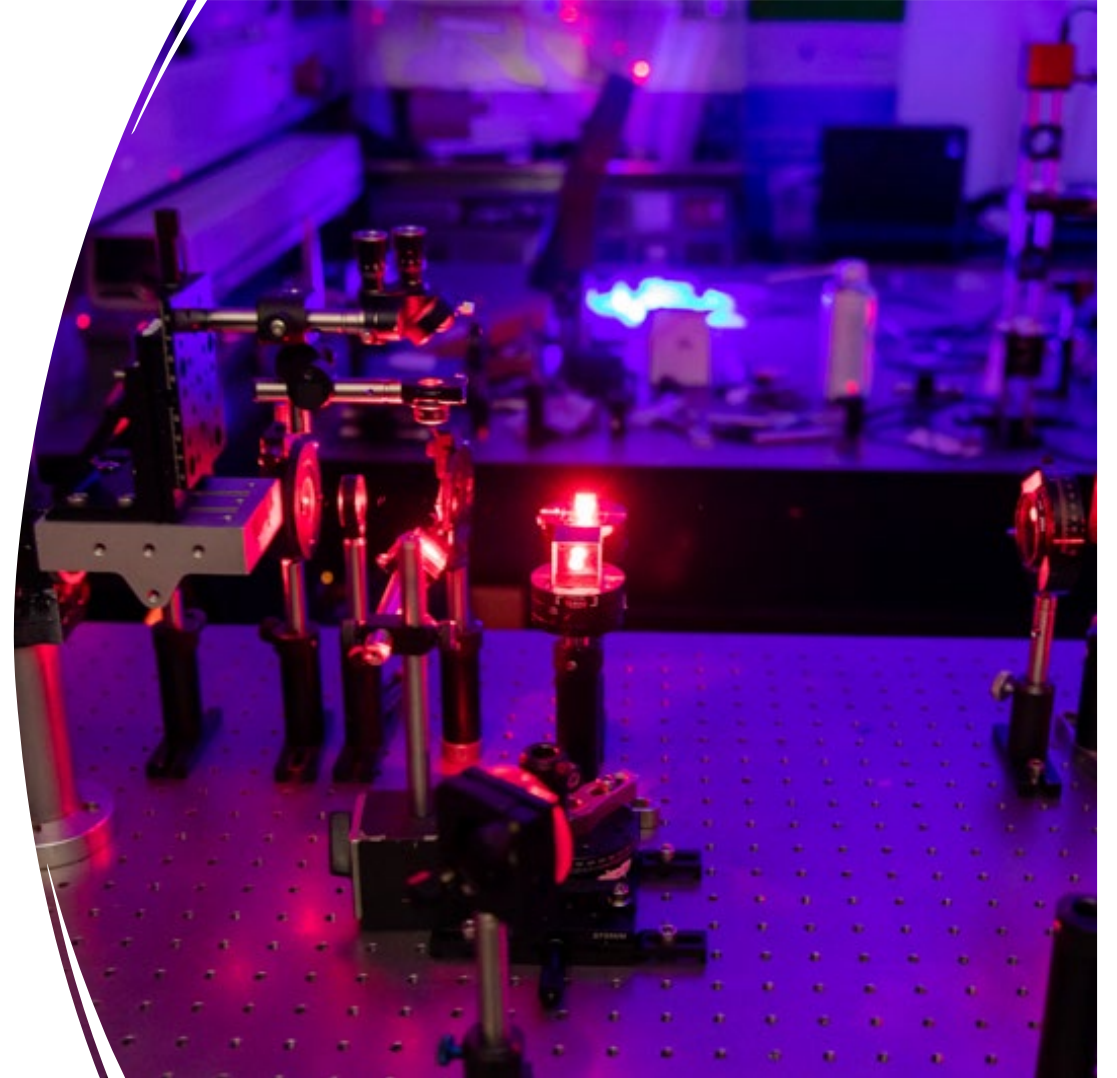
Designated Research Centre associated with the [School of Physics, Clinical and Optometric Sciences | TU Dublin](#) and the [Physical to Life Sciences](#) Research Hub

Graduated >30 PhD students and spun out a manufacturing company

6 Full time PIs

18 full-time Postgraduate students

6-10 undergraduate students per year

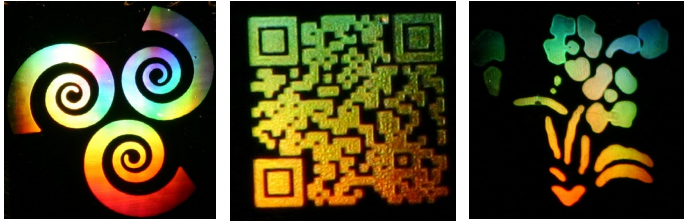


Technology Transfer Office vitally important in enabling the company to get started

The National Digital Research Centre's Launchpad training programme helped us to prepare for the task of attracting investment

Intellectual Property protection and *the need for a series of product innovations and developments*, to gain the confidence of the user market and of potential investors.

Spin-out company: Optrace project



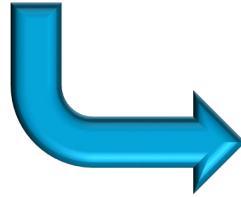
Funded by EI –Commercialisation fund 2011-2012

Team : Prof. . Izabela Naydenova (Principal Investigator)

Prof. Vincent Toal, Dr. Suzanne Martin, Prof. Emilia Mihaylova, Amanda Creane

Technical work – production scaling, lifetime proving

Commercialisation work –market research, industrial partners



Spun out in 2015, secured >1M€
8 **full-time employees** including former
IEO staff and graduates



A word of caution!!

choosing a CEO

What is commercialization? Why commercialize research?

Common routes to commercialization / innovation

Examples of research commercialization –University spin-outs

Supports and protections:

Formal agreements (MTAs NDAs) commonly used
code of practice, roles, rights and responsibilities

Useful links and resources

Commercialisation of research – what is it?

Commercialization is *one* output from research activity.

“Technology Transfer - technology developed in one organization is adopted by another organization”

“**Commercialization** occurs when the party transferring the technology **receives money in exchange for giving up some or all of their rights to the technology**. In other words, commercialization involves a sale.

*What Every Researcher Needs to Know About Commercialization , *Phyl Speser, J.D. Ph.D. Foresight Science & Technology Incorporated November 9, 2008* <https://www.slideshare.net/slideshow/what-every-researcher-needs-to-know/4653113>

Commercialization: “Using IP (from public research) to create or develop a commercial activity”

‘Putting public research to work for Ireland’- *Enterprise Ireland 2022*

Reminder - why commercialize research?

Society perspective:

Useful technologies; to improve quality of life / efficiency

Create and maintain employment

Strengthen the company / region knowledge base

Researcher/University perspective:

Income and facilities to University

Add to the relevance of research carried out

Generate income to support further research

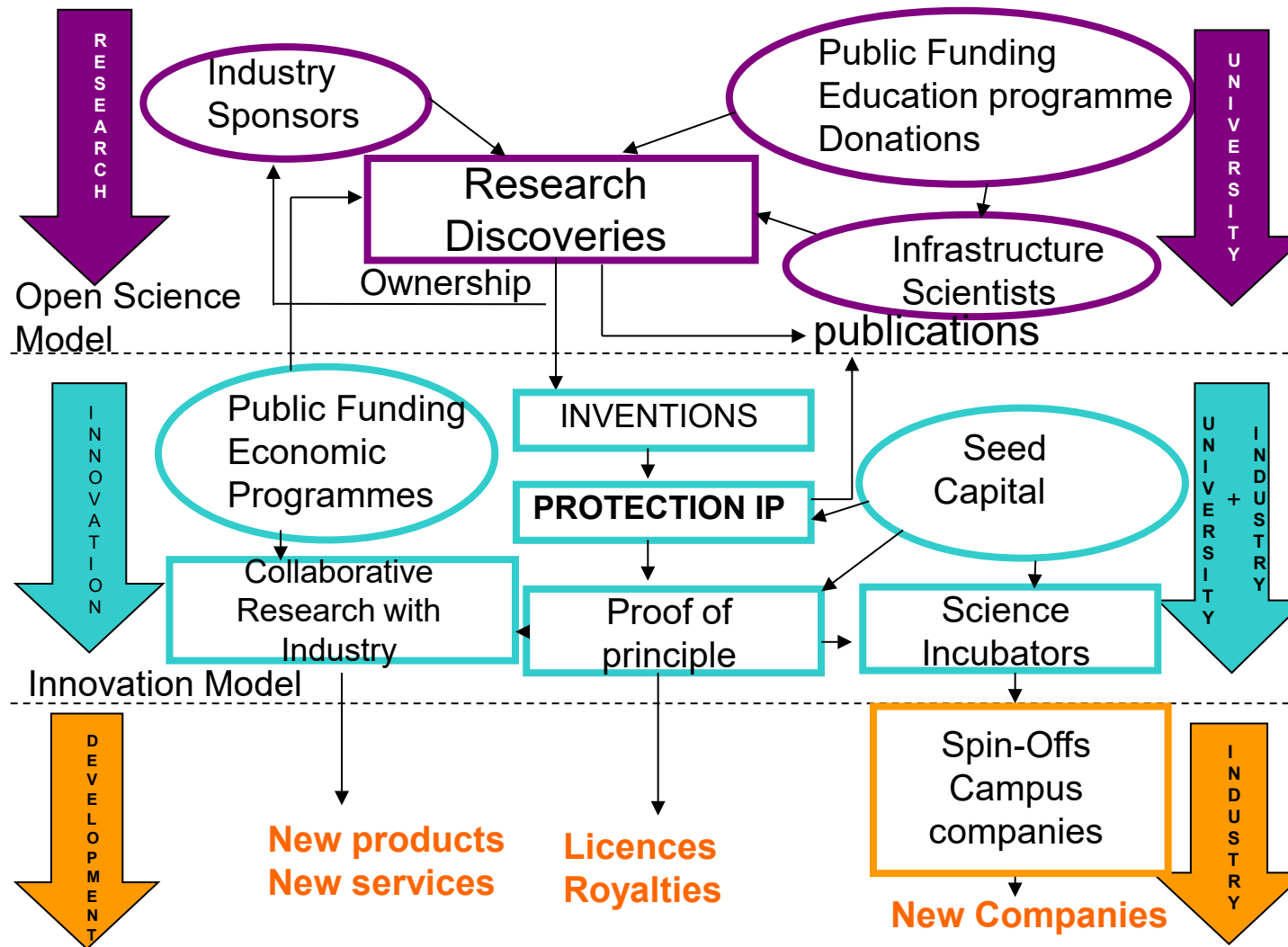
Enhance researcher's reputation and career / Institute's reputation

However

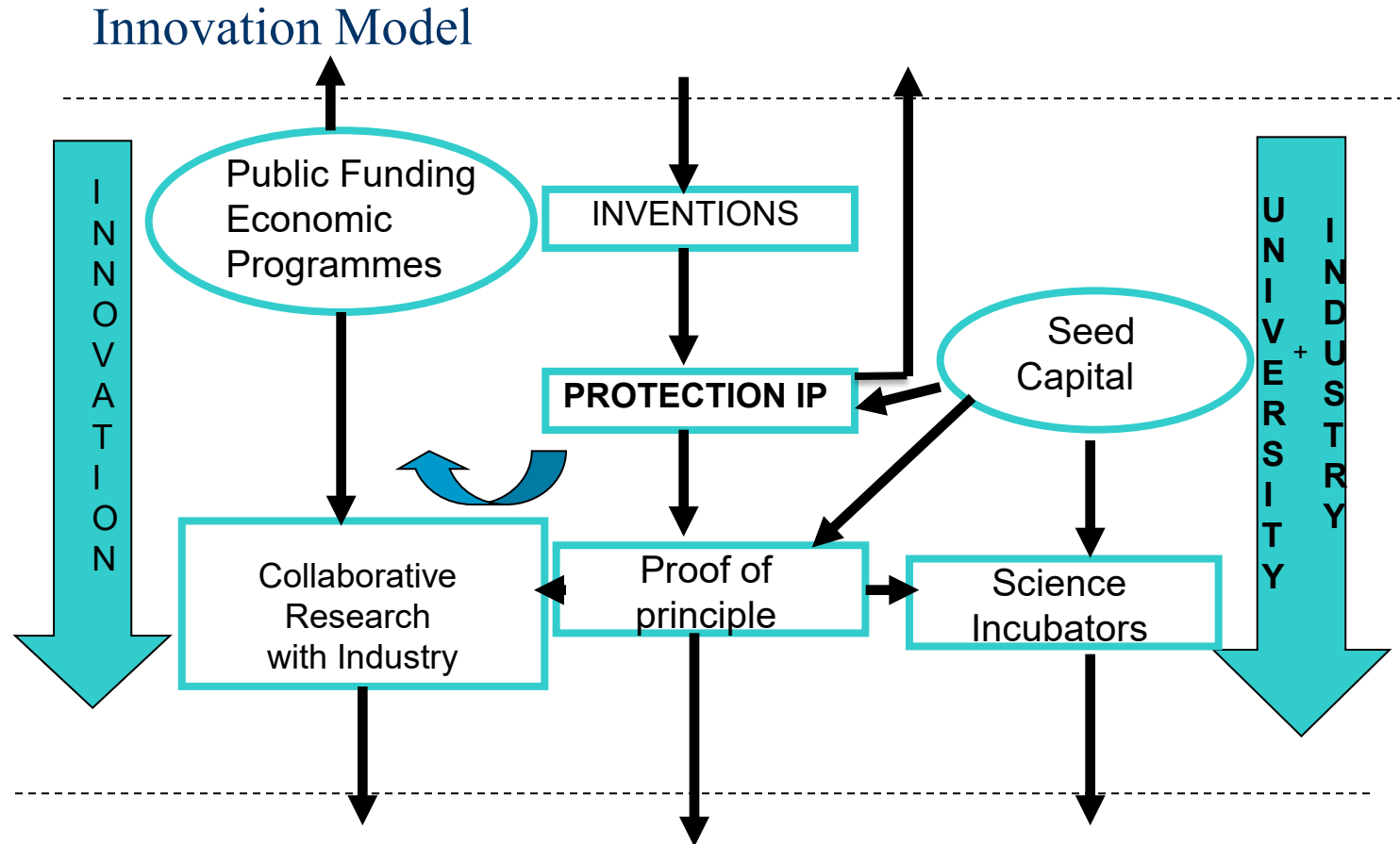
Potential for excessive emphasis on short term targets

Potential for excessive industry influence on teaching and research

The Innovation Model for Knowledge Transfer



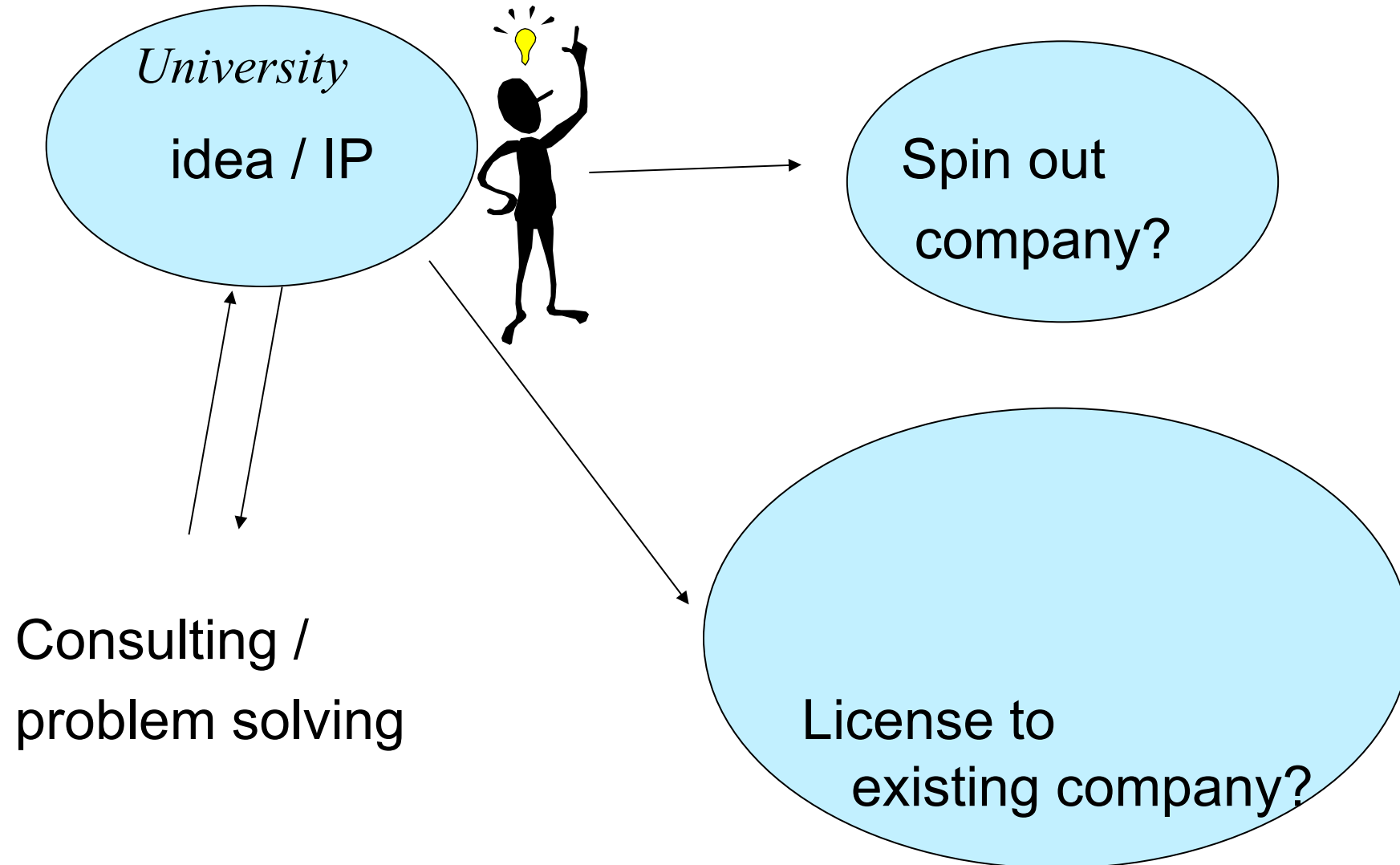
The Innovation Model for Knowledge Transfer



TECHNOLOGY READINESS LEVEL (TRL)

| | | |
|---------------------------------------|---|---|
| RESEARCH DEVELOPMENT DEPLOYMENT | 9 | ACTUAL SYSTEM PROVEN IN OPERATIONAL ENVIRONMENT |
| | 8 | SYSTEM COMPLETE AND QUALIFIED |
| | 7 | SYSTEM PROTOTYPE DEMONSTRATION IN OPERATIONAL ENVIRONMENT |
| | 6 | TECHNOLOGY DEMONSTRATED IN RELEVANT ENVIRONMENT |
| | 5 | TECHNOLOGY VALIDATED IN RELEVANT ENVIRONMENT |
| | 4 | TECHNOLOGY VALIDATED IN LAB |
| | 3 | EXPERIMENTAL PROOF OF CONCEPT |
| | 2 | TECHNOLOGY CONCEPT FORMULATED |
| | 1 | BASIC PRINCIPLES OBSERVED |

Common routes to commercialisation

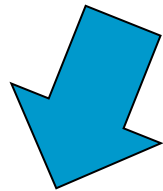


Typical steps in commercialization

Developing a proof of concept – showing it works!

IP disclosure and initial protection

Communication with company(s). Technical tests and fine tuning.



License

License negotiation.

Integration into the production
and/or processes of the company



Spin out

Attracting start-up funding (investors, banks)

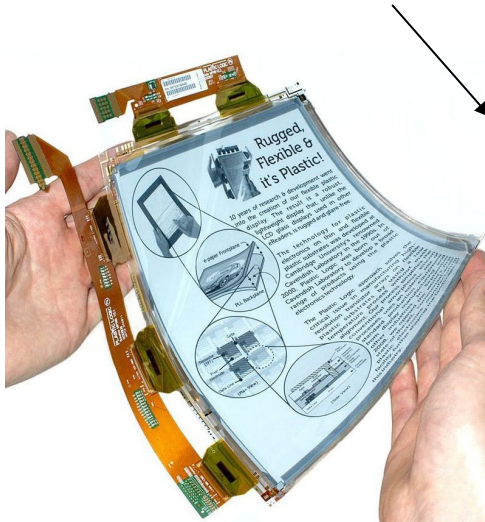
Developing a successful business model

Acquiring first customers

Growing a profitable business

University spin out example 1: Plastic Logic Example of change in direction

Plastic Logic develops and manufactures glass-free, flexible, plastic displays



Source: wikipedia entries and <http://www.plasticlogic.com>

2000 Spun –off from University of Cambridge - Professor Henning Sirringhaus and his team develop a process for printing transistors.

Plastic Logic announced its first plastic screen device on November 30, 2004, to be used by Siemens Communications in their mobile devices.

2008 – Plastic Logic open world's first, commercial, plastic electronics manufacturing facility in Dresden

After major venture capital investment, 2012, Plastic Logic announced that they were abandoning plans to manufacture their own e-reader devices (focusing instead on licensing their existing technology – plastics inside)

2015. The company announced that the technology development and manufacturing parts of Plastic Logic would be separated

University spin out example 2 -example of a spin out licensing



Founded 2010 Strathclyde U. + UCL

Drug transport nanoparticles.

first to show that peptides could be delivered across the blood brain barrier to elicit a pharmacological response, when presented as **peptide drug nanofibers**

Envelta™ (no analgesic tolerance, reward seeking behaviour) licensed to Virpax Pharmaceuticals (NASDAQ:VRPX)

Molecular Engineered Material
possible because of Nanomerics' scientific and technological advances in:

polymer synthesis
polymer analytical methodology
nanoparticle fabrication
nano-scale analytical processes

Ijeoma Uchegbu, PhD
Professor of Pharmaceutical Nanoscience
Chief Scientific Officer

Andreas Schätzlein Dr Med Vet
Professor of Translational Therapeutics,
Chief Executive Officer



Pipeline

| Product* | | | Development Stage | | | |
|-----------|--------------|-------------|-------------------|-------------|---------|----------|
| Name | Partner | Indication | Discovery | Preclinical | Phase I | Phase II |
| Envelta™ | Virpax / NIH | Pain | <div></div> | | | |
| NobrXiol™ | Virpax | Epilepsy | <div></div> | | | |
| NB129 | Nanomerics | Parkinson's | <div></div> | | | |
| NBX | Undisclosed | Migraine | <div></div> | | | |
| OC132 | Nanomerics | Eye Pain | <div></div> | | | |
| OC134 | Nanomerics | Front/Eye | <div></div> | | | |
| OC135 | Nanomerics | Glaucoma | <div></div> | | | |
| OC137 | Nanomerics | Back/Eye | <div></div> | | | |
| ORX | Undisclosed | Undisclosed | <div></div> | | | |
| CA151 | Nanomerics | Cancer | <div></div> | | | |
| AnQlar™ | Virpax | Sars-Cov2 | <div></div> | | | |

Adding new
discoveries and
progressing trials



Apr 13

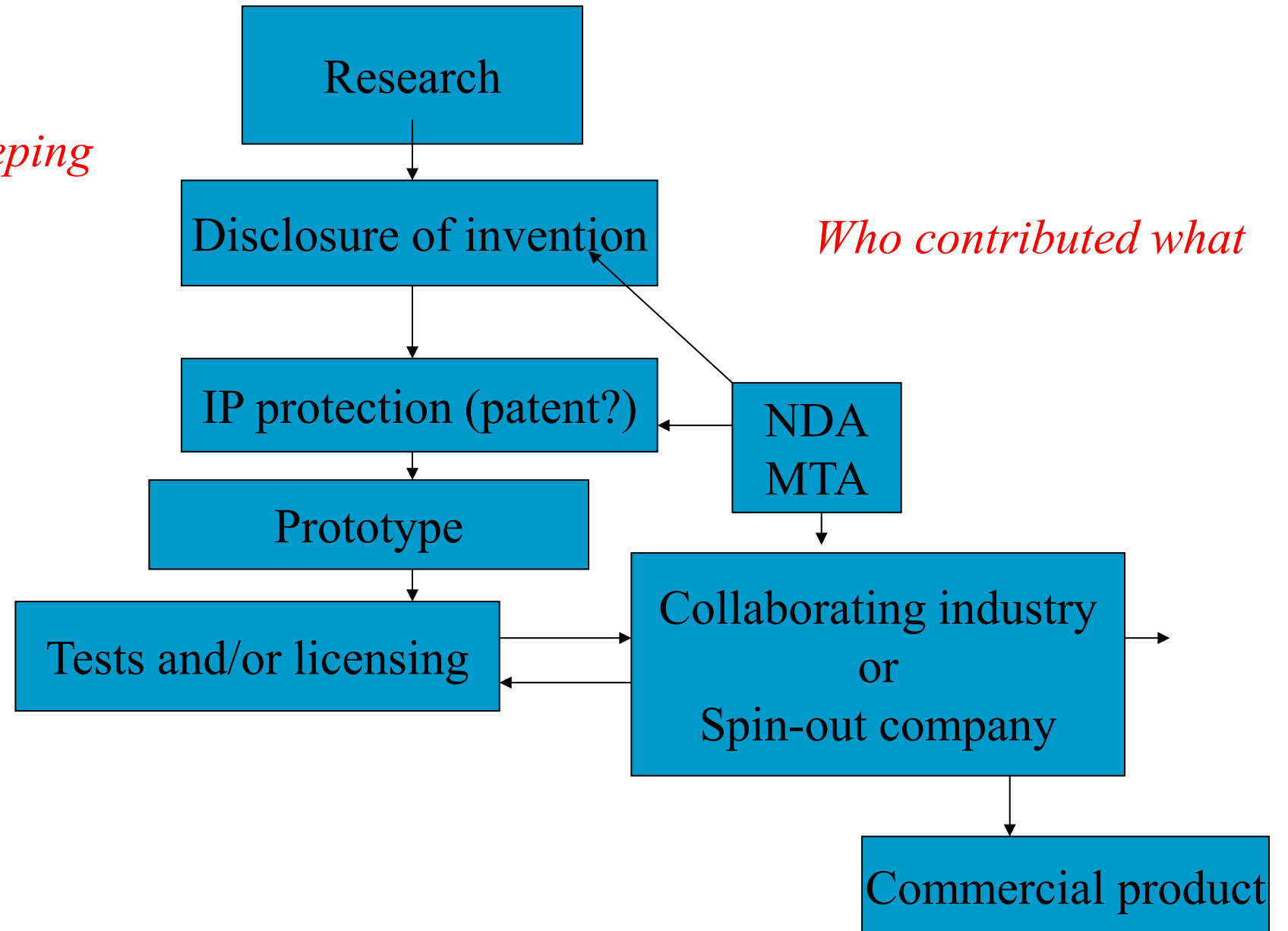


Nanomerics Announces Ocular Molecular Envelope Technology (MET) Patent Granted in Canada

Nanomerics Ltd., a private speciality pharmaceutical company today announced that the Company had been granted patent protection in...

Process from researchers' perspective

Good record keeping



Who contributed what

Agreements

Non-Disclosure (confidentiality) Agreement (NDA)

protect against communication of sensitive information by employees or collaborating partners

Examples:

researchers may need to disclose information about how a prototype works, to elicit interest from potential partners and users/customers

An employee may be required to sign an NDA to protect the employer from disclosure of IP or commercially sensitive information

Protects against:

- disclosure of IP
- disclosure of commercially sensitive information
- disclosure of technically sensitive information

Specifies:

- Subject matter
- Duration
- Other matters

Materials Transfer Agreement (MTA)

protect samples, prototypes, materials sent to third parties

Example: researchers have developed a new water resistant coating and provide samples to potential manufacturers and users for testing and evaluation

Such samples *always* covered by an MTA

Protects against

Reverse engineering

Unauthorized release of samples to others

Potential liability

Collaborative agreements

in consortia, used to define roles, agree confidentiality and define ownership of IP – contains NDA and MTA sections

For all agreements:

- Foreground IP- result of the collaborative project/ work

- Background IP- **pre existing** IP, wholly owned by one or other partner

Roles, rights and responsibilities

Researcher:

- Generate IP and research data
- Respect confidentiality (NDA)
- Keep records (lab notebooks etc)
- Appropriate disclosure (disclosure form)
- Right to know employer's IP policy at outset

Employer:

- Incentives for generation of IP and disclosure (e.g. % of income on royalties)
 - Communication of clear IP policy
 - Support the exploitation of valuable IP
 - Right to be informed
 - Probably has right to IP
 - The legal owner of the patent is often the employer (defined in employment contract)
- code of practice *Ireland* 2005

Things to think about....

Research trends

Patentable/commercial ideas in your research

Confidentiality

Publication versus protection

IP ownership inventors (record who contributed what)

Record keeping (lab notebooks)

Licensing versus new company

Existing patents database - European Patent Office

[Espacenet – patent search](#)



TTO support for strategic exercise in evaluation, SWOT

Completed June 2020

Report: Table of Contents

Executive Summary

1.0 Scope and Context

1.1 The Review Outputs

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3.0 SOAR (Strengths, Opportunities, Aspirations, Results)

3.1 Strengths

4.0 Centre Profile

5.0 Opportunities

5.1 An ambitious Vision

5.4 Management, Technical and Support Functions

5.5 Re-envisioning IEO Offerings

5.6 Training and Education

5.7 Spin-Outs

5.8 Values

5.9 Organisation Structure

5.10 Mission Statement

5.11 Key Actions

6.0 Aspirations & Identifying Strategic Objectives

7.0 Results

8.0 Organisation

9.0 Conclusions & Recommendations.

Appendix A. Identified Opportunities.

A Focus on industry

B Research Centre Development

C Values

D Industrial Partnerships.

E Academic Partnerships

F New Photosensitive Materials

G Employment Contracts/Arrangements/Career advancement

H Research and Support Services.

I New Topics & New Links

J Training & Education

K Spin-Outs

Appendix B. Group Members.

One page per theme

Functionalised optical structures for sensing, security and micro-actuators @IEO

Contact: izabela.naydenova@tudublin.ie

Advantages

- electronic read-out , **remote monitoring**
- visual indication, **no power required**
- compact size and weight, packaging**
- low cost, disposable**
- multiplexing**

Applications

- Selective detection of **VOCs**
- Detection of key parameters for **wound healing monitoring**
- Surface structures for **bacteria adhesion monitoring and quantitative detection**

Team: 7 PhD students, visiting PhDs, undergrads

Collaborators: IEO PIs;

SoPCOS: G. Amarandei, C. Grogan, H. Lopez;

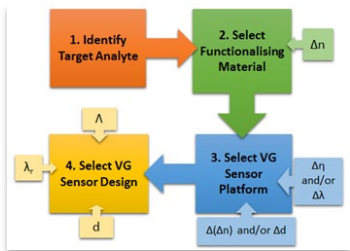
TU Dublin: D. Mackey, M. Filatov

International: SENNET project, WHISKIES Project,

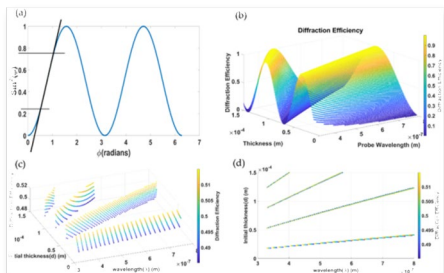
BAS, Univ. Caen



Theoretical modelling

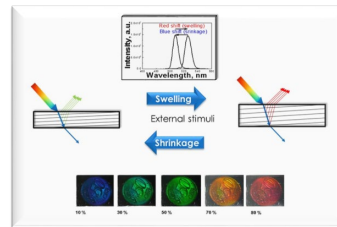


DOI: 10.1364/JOSAA.35.000012
DOI: 10.1364/JOSAA.34.002110
AJP Vol 32, N5 – 8 (2023) 291-302
DOI:10.1364/JOSAA.523677



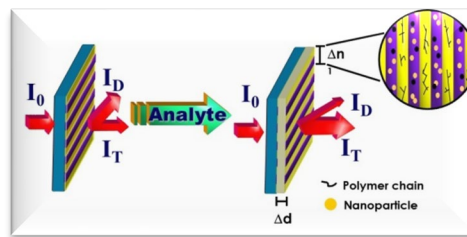
Holographic transducers Visual detection

ISBN: 978-0-12-815467-0, Ch7
DOI: 10.1002/adpr.202100062.



Electronic read-out

DOI: 10.3390/s19051026

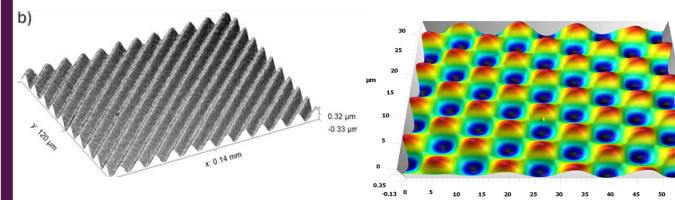


Surface Structures

DOI:10.1021/acsaom.4c00138

DOI:10.1117/12.3022060

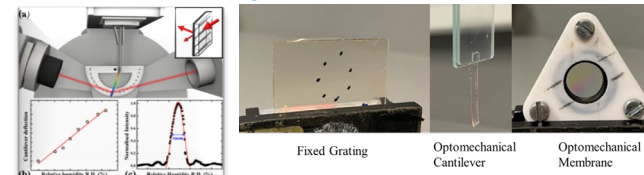
DOI:10.1117/12.2665681



Optomechanical Structures

DOI: 10.3390/s21051673

DOI:10.3390/s23125711

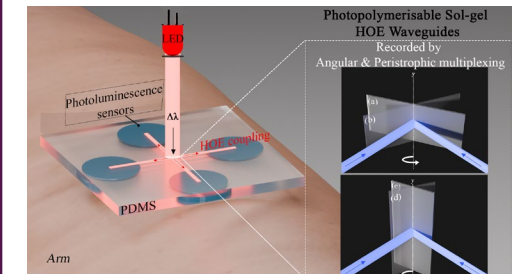


Materials

Photopolymers; Cellulose based; Hydrogel based

DOI:
10.3390/photronics8080329
DOI:10.3390/gels9090710

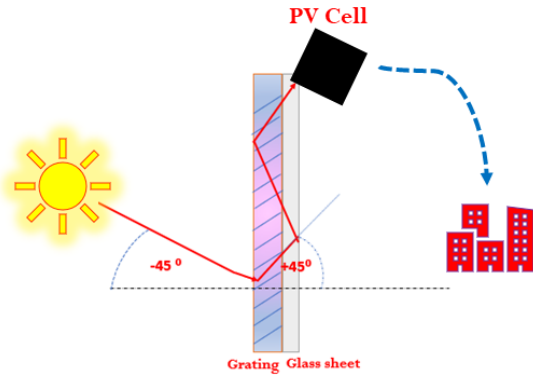
Light management for sensing



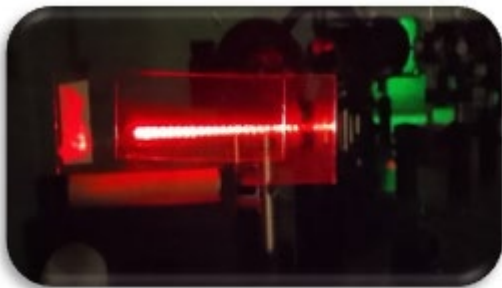
IEO Research topic – Holography for Diffractive Optical Elements

Contact: Suzanne.martin@tudublin.ie

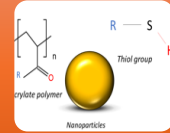
Application: SOLAR



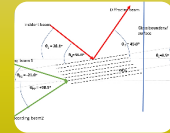
Developing polymer
HOE couplers to Divert
sunlight towards solar
cells



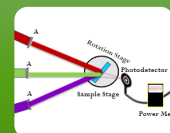
*HOE Couplers development,
Photonics | Free Full-Text*



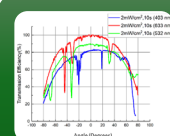
**Photosensitive
materials development**



**Fabrication of
Diffractive Optics**



**Testing and analysis of
microstructure**



Design and modelling



focas



Team:

PhD Michael Murray
PhD Jorge Lasarte
PhD Dipanjan Chakraborty
Postdoc Dr Rosen Georgiev

+ All IEO PIs collaborating

Review of recent advances in photosensitive polymer materials and requirements for transmission diffractive optical elements for LED light sources



Application: LIGHTSHAPE

Energy savings - light to area target only



Entertainment Advertising Street lighting Horticulture

Figure 1. Using DOEs to divert LED light to the intended target

Polymer HOEs for LEDs

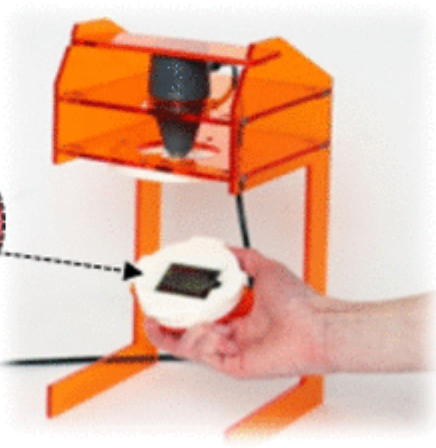
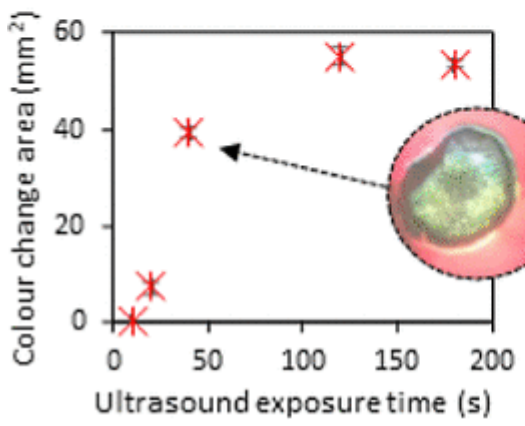
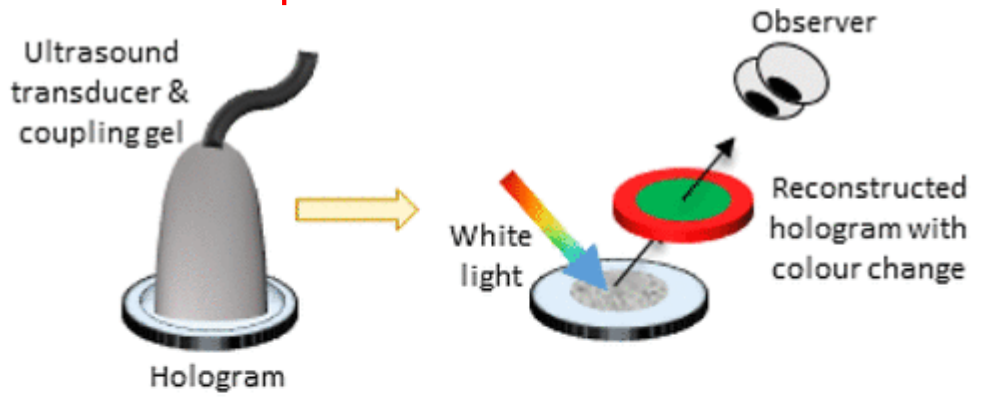
**Increase Efficiency
Reduce light pollution**

Collaborators:
University of Zaragoza

Modeling holographic optical element performance



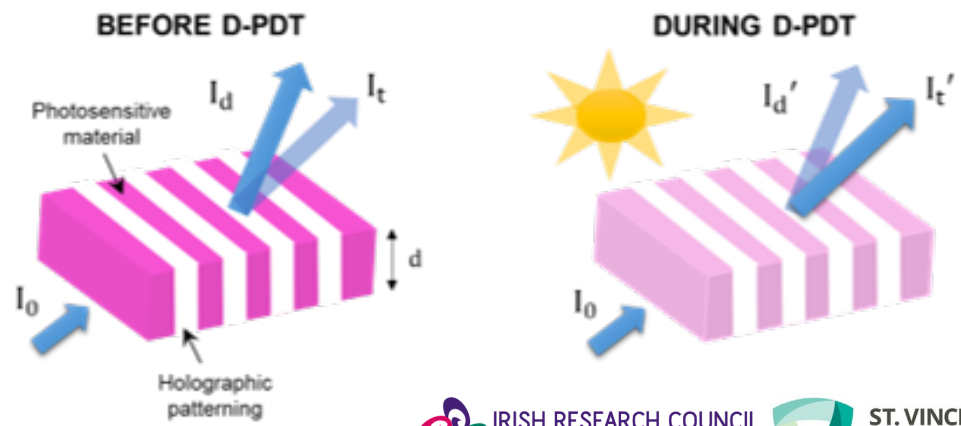
Holographic sensors for dosimetry in Therapeutic Ultrasound & HIFU



T. Mikulchik, J. Walsh, J. Browne, I. Naydenova, D. Cody, *ACS Applied Materials & Interfaces* 15, (2023).



Wearable optical sensors for personalised patient dosimetry in daylight photodynamic therapy



IRISH RESEARCH COUNCIL
An Chomhairle um Thaighde in Éirinn

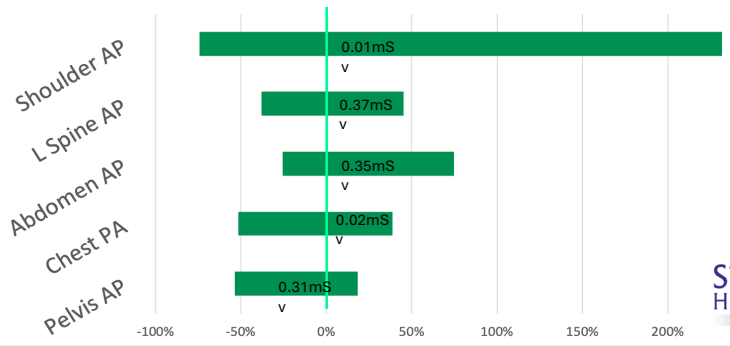


ST. VINCENT'S
UNIVERSITY HOSPITAL
Elm Park

J. O'Callaghan, S. Courmane, J. McCavana, D. Cody, *JOSA A*, 39(1) (2022).

Optimisation of Image Quality in Digital Radiography

Range of effective doses (relative to the mean) for a variety of imaging protocols in nine general x-ray rooms



ST JAMES'S
HOSPITAL





<https://kevinpmurphy.wixsite.com/murphy-holography>



Holography for Wavefront Sensing & Vision

SpacePHORM - Space based applications using PHOtosensitive Recording Materials



SFI FFP funded 4 PhD students full-time - 2 at each partner



1. Photosensitive Materials (TU Dublin)

3. Analog Holographic WFS (TU Dublin)

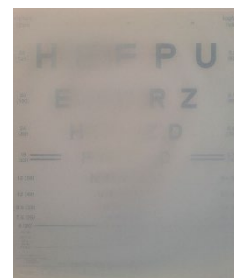
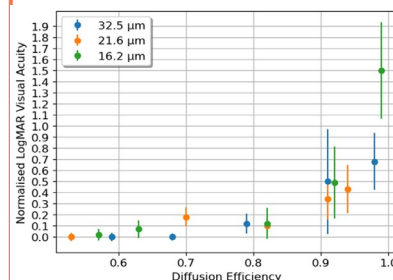
2. Active Optics Testbed (U Galway)

4. Novel Diffuser WFS (U Galway)

HOEs for Vision - IRISH RESEARCH COUNCIL An Chomhairle um Thaighde in Éirinn

Spectacle-adherable holographic **diffusers** to treat amblyopia/diplopia

Spectacle-adherable holographic **lenses** for treating myopia, hyperopia, presbyopia, etc.



1st Choice: 0%

1st Choice: 69%

1st Choice: 6%

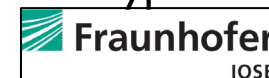


HoloWave - New Approaches to Wavefront Sensing, based on Modal and Zonal methods, using Novel Holographic Devices

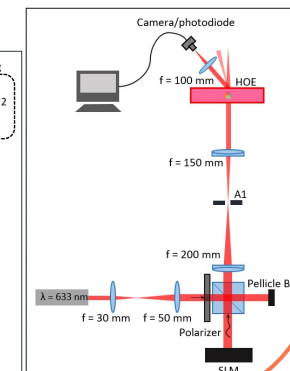
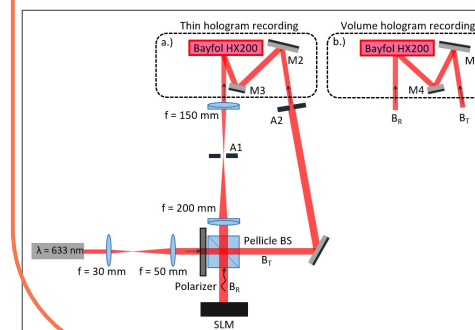


Creating Analog Holographic Wavefront Sensors (AHWFS) in photopolymer

SLM-based recording & novel types of AHWFS



Ophthalmic and optical comms applications



Development of photopolymerisable glass for novel applications

a new generation of photopolymerisable glasses that provides an innovative material solution for the fabrication of optical devices by holographic patterning and two-photon polymerisation structuring

Contact: tatsiana.mikulchyk@tudublin.ie

PolyGlass for holographic recording

(collaboration with CREST, TU Dublin)



A
D
V
A
N
T
A
G
E
S

Sustainable
processing

Water/
thermal
resistance

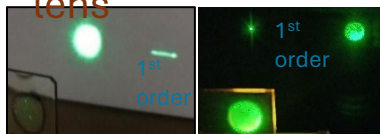
Dimensional
stability/
robustness

Flexibility
for PIS

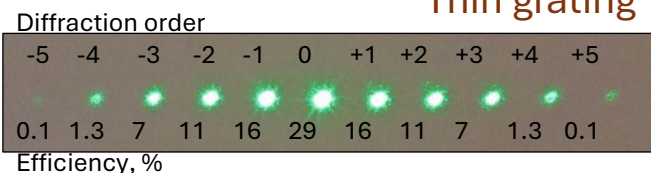
Thick gratings



Holographic
lens



Thin grating



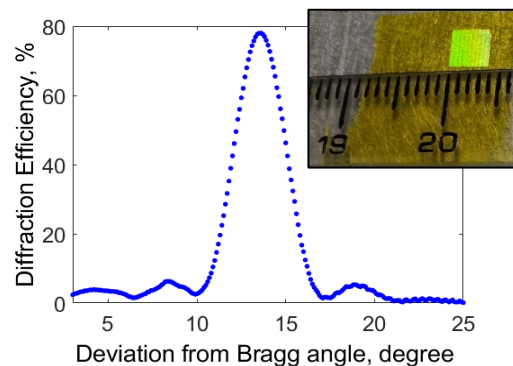
Mikulchyk T et al *Applied Sciences* **2022** doi:10.3390/app12125969

PolyGlass for 2PP structuring

(collaboration with TU Wien)



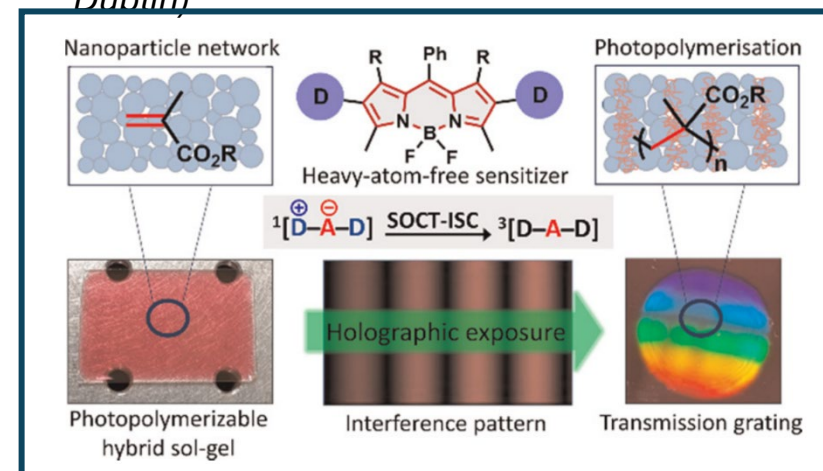
Volume transmission grating



Mikulchyk T et al *Adv Opt Mater* **2022** DOI: 10.1002/adom.202102089

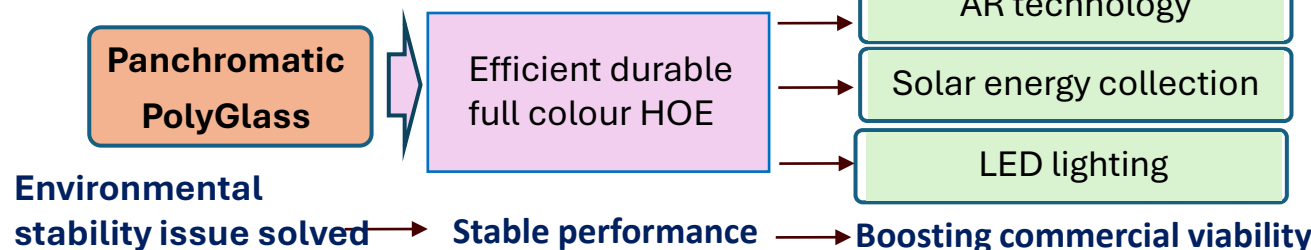
PolyGlass with improved UV-resistance

(collaboration with School of Chemistry, TU Dublin)



Mikulchyk T et al *J Mater Chem C* **2022** DOI: 10.1039/D2TC02263J

Current research: panchromatic PolyGlass



Optics in Eyecare Matthew Sheehan PhD

Contact: matthew.sheehan@tudublin.ie

School of Physics, Clinical and Optometric Sciences.

Associations:

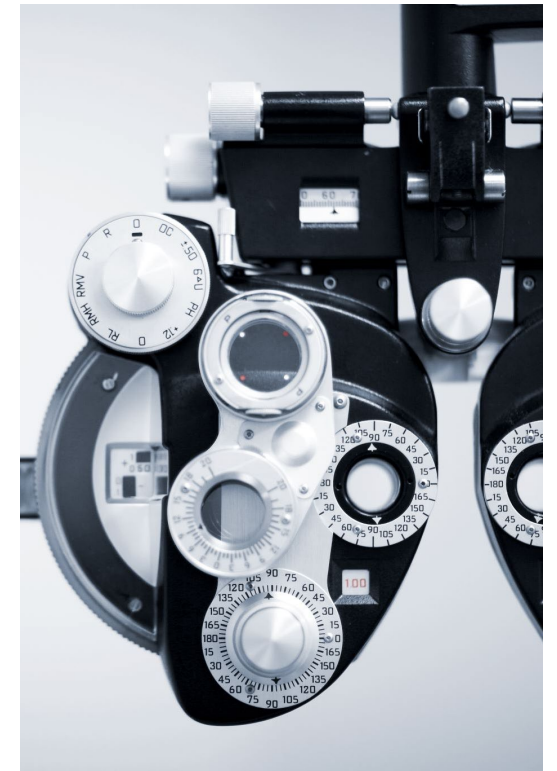
National Optometry Centre

Centre for Industrial and Engineering Optics

Current research projects

- Holographic diffusive elements for vision therapy
- Ocular microtremor – an intrinsic biomarker for neurological degeneration
- Dual wavelength Corneal collagen crosslinking

TU Dublin's 'One To Watch' Researcher Award



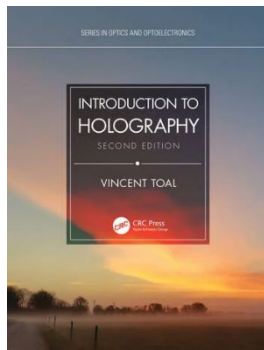
Vincent Toal

Single and dual wavelength recording of holographic optical components

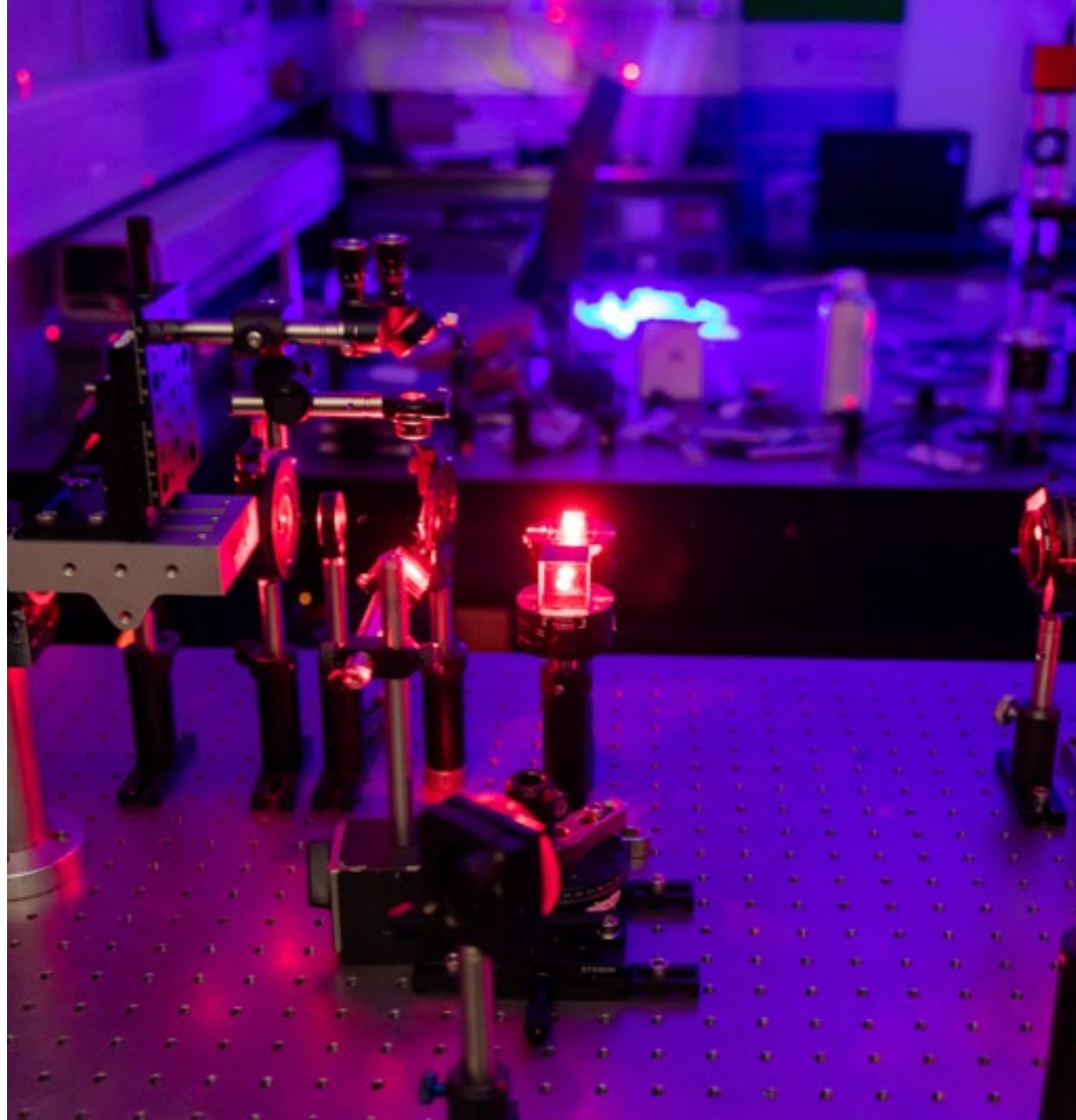
Speckle metrology and interferometry

Computational optics - imaging around corners, behind obstacles, through scattering media

Holographic video display



[Introduction to Holography -](#)
[2nd Edition – CRC Press 2023](#)



IEO Postgraduate Team 2024

Rosen Georgiev (Postdoc)
 Graceson Antony
 Faolan Radford McGovern
 Emma Brannigan
 Clare Devery
 Matt Hellis
 Michael Murray
 Jorge Lasarte
 Dipanjan Chakraborty
 Owen Kearney
 Saoirse Maher
 Javier Arguelles Lopez
 Luca Sorridente
 Pamela Stoeva
 Aleksandra Hernik
 Masaya Sugihara
 Jamshed Aftab
 Vishwath Rishaban
 David Ma
 Rory Staines

IEO External Advisory Board 2024

Board Chair:

Prof Vincent Toal

Board members:

Dr Jennifer Brennan, Prof Chris Dainty, Mr Richard Lydon, Dr Siobhan Daly,
 Dr Suzanne Martin, Prof Izabela Naydenova. Dr Monika Zawadzka, Ms
 Pamela Stoeva. Prof Svetlana Mintova, Dr Shawna Johnston

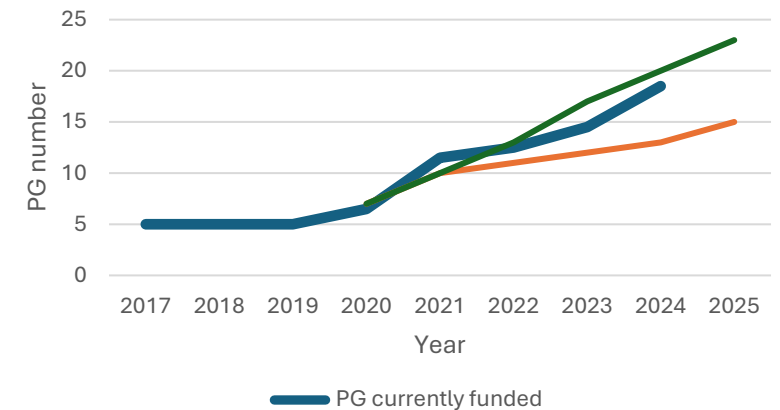
Scientific Director:

Prof Izabela Naydenova

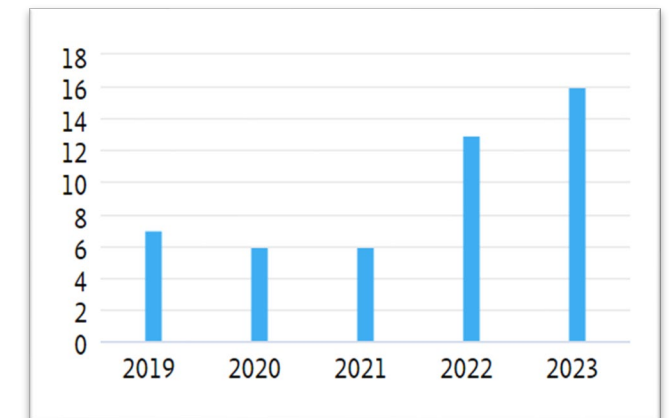
Manager:

Dr Suzanne Martin

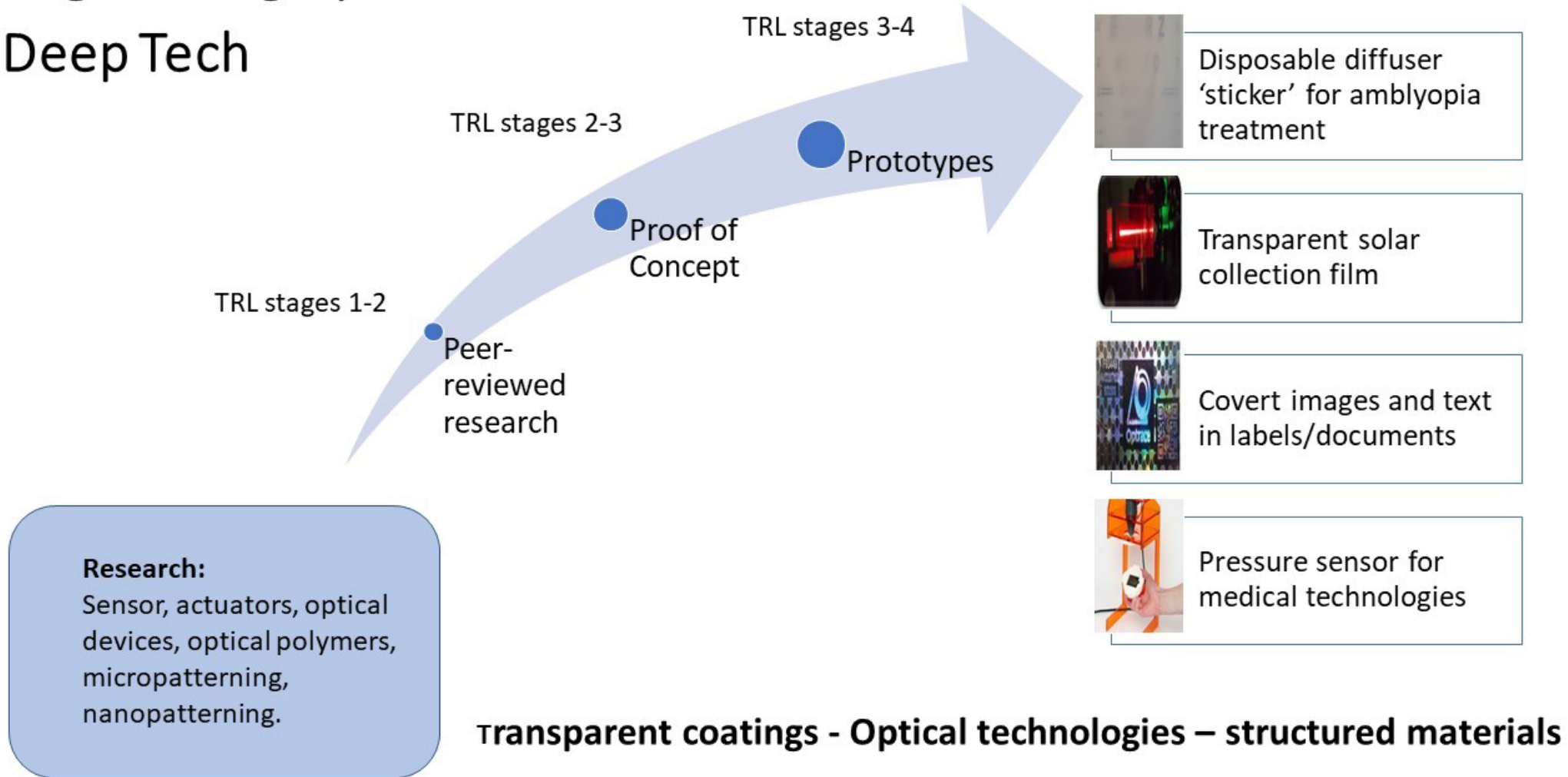
Postgraduate numbers per calendar year





Peer reviewed journal papers



Engineering Optics for Deep Tech



Prototyping facility:

| EQUIPMENT |  |  |  |  |
|-----------|--|---|---|--|
| FUNCTION | <p>Laser Cutting: Combination <u>Fibre</u> and CO2 Laser Cutter to enable marking and cutting of multiple materials</p> | <p>3D printing: Stereolithography Resin 3D Printer for production of highly accurate parts in multiple materials</p> | <p>Materials coating: Slot-Die Coater, FOM <u>scalarSC</u> Entry Level Sheet based to enable high quality coating at precise thickness</p> | <p>Surface profiling: WLI profiler for <u>non contact</u> profiling of optical components and patterned surfaces, <u>nanometre</u> depth precision, <u>micrometre</u> lateral resolution.</p> |

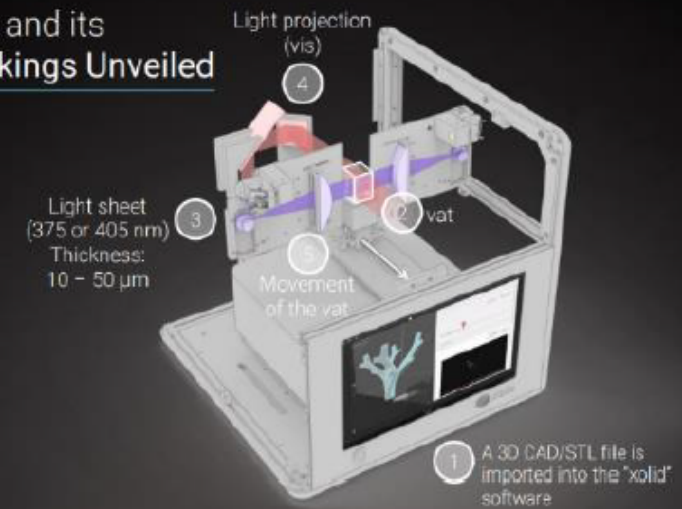
technology for 3D printing of small optical components ([xolo® \(xolo3d.com\)](http://xolo3d.com)).

Recent Advance:
Direct Printing of Transparent Optical Elements



material: urethane methacrylate
no coating
no polishing

The Xube and its
Core Workings Unveiled



Commercialisation of Research Short Programme

Invention and innovation

University of Petroleum, Qingdao, China

Prof. Izabela Naydenova, Dr. Dervil Cody, Dr. Suzanne Martin

Govt. of Ireland Academic Mobility Grant

6 lectures and workshop

30 students

IEO Summer School

Holographic methods and applications

June 2024

Rosen Georgiev

Ivan Divliansky (CREOL)
Sergio Gallego Rico (Alicante)
Kai Melde (Heidelberg)
Hrvoje Skenderovic (IOP Zagreb)
Thomas Zengraf (Paderborn)
Robert McCloud (Colorado)
Raymond Kostuk (Arizona)

Covestro
Merck
Xolography



26 students
(Japan, Spain, Italy, Germany, Ireland)

IEO Centre: Connect & Opportunities

- Website – [Research | TU Dublin](#)
- Social – <https://www.linkedin.com/company/ieo-tudublin/>
- Watch for postdoc opportunities in 2025!
- Open to collaboration and potential PhD and postdoc projects.

Please feel free to contact us