

Fluorescence
1st
GEN
Low cost
Deep blue available
High color purity
Low Efficiency (25%)

Phosphorescence
2nd
GEN
High cost
Deep blue currently not available
Low color purity
High Efficiency (100%)

TADF
3rd
GEN
Low cost
Deep blue - under development
Low color purity
High Efficiency (100%)

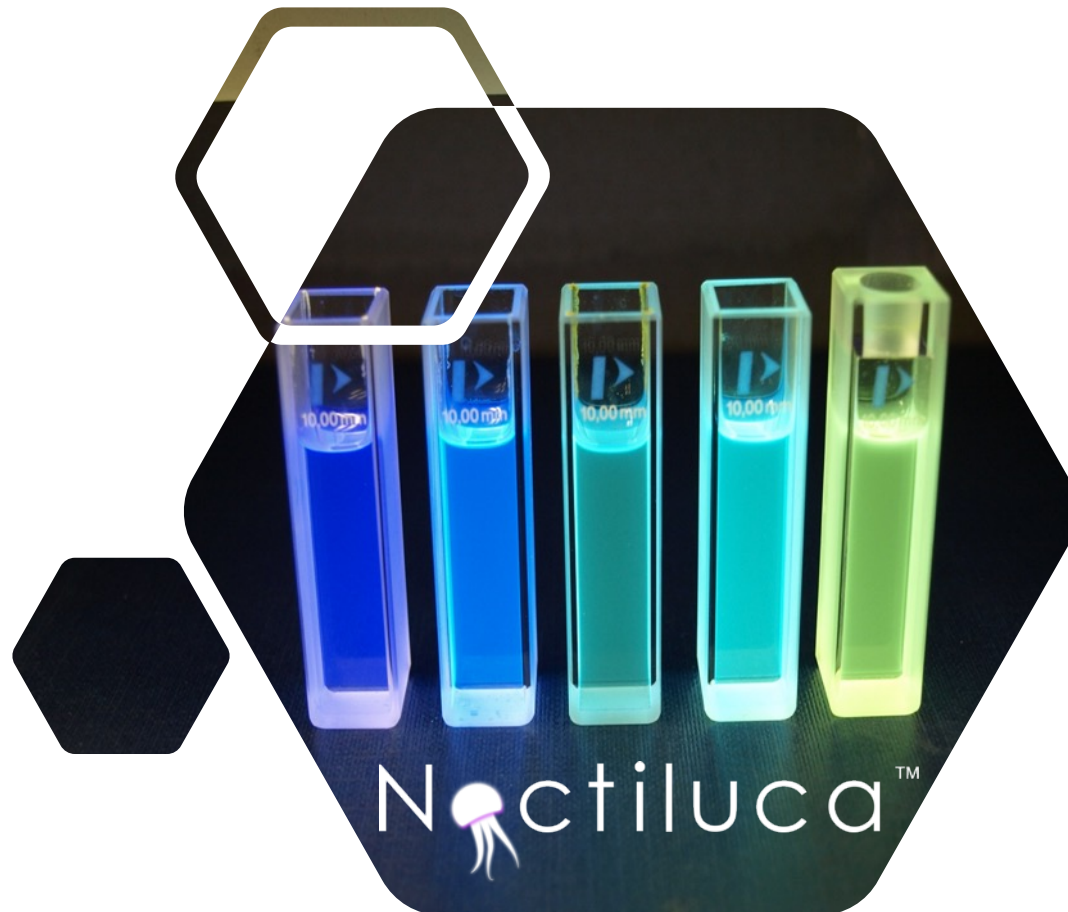
Hyperfluorescence
4th
GEN
Low cost
Deep blue - under development
High color purity
High Efficiency (100%)



Noctiluca develops third- and fourth-generation OLED TADF emitter systems, which will become an alternative to existing technology

▶▶▶▶ EXIT DARK MODE ▶▶▶▶

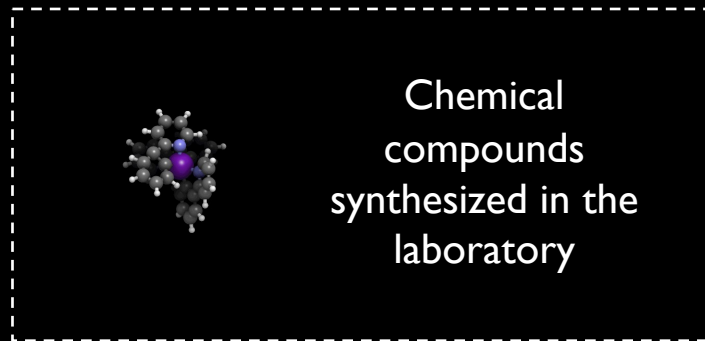
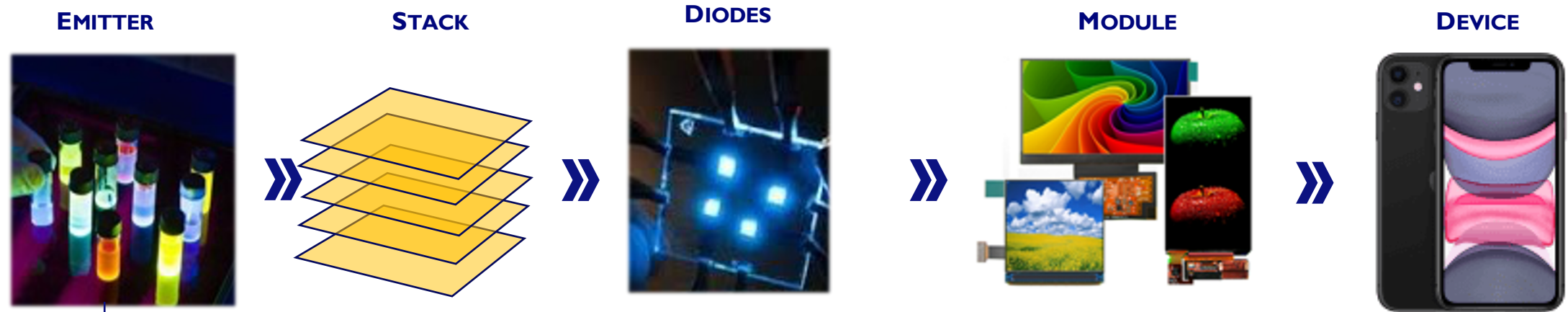
Who we are?



- Based in Torun (Poland)*
- Focused on developing highly efficient emitters for OLED displays
- Engaged with major-league science partners as well as display leaders
- Access to several dozen of leading technical experts

*City in the north-central Poland with a high-ranked and high-profiled educational background

Problem in the basic layer of OLED screen structure



Lack of an efficient blue emitter, responsible for ~70% of light emission. OLED industry still uses inefficient I-gen blue emitter

Problems with emitters of current generation



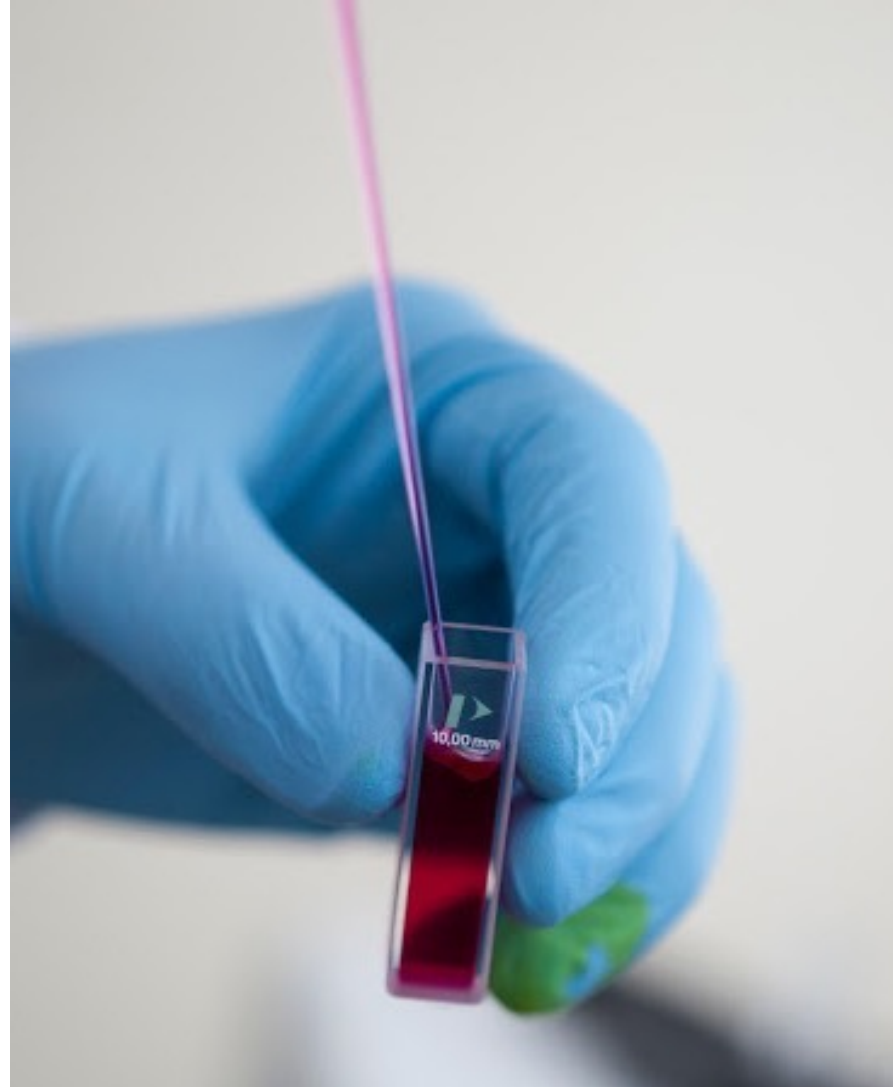
LACK OF BLUE EMITTER



BURN-IN EFFECT



DEVICE OPERATION TIME



HEAVY METALS



ENERGY EFFICIENCY



COST

Solution – a new generation of emitters



**CLEAR PATH TO OBTAINING
BLUE EMITTER**



NO HEAVY METALS



**NO BURN-IN EFFECT &
STABILITY OF COMPOUNDS**



ENERGY EFFICIENCY



DEVICE OPERATION TIME



LOWER PRODUCTION COST

ADDITIONAL TADF BENEFITS



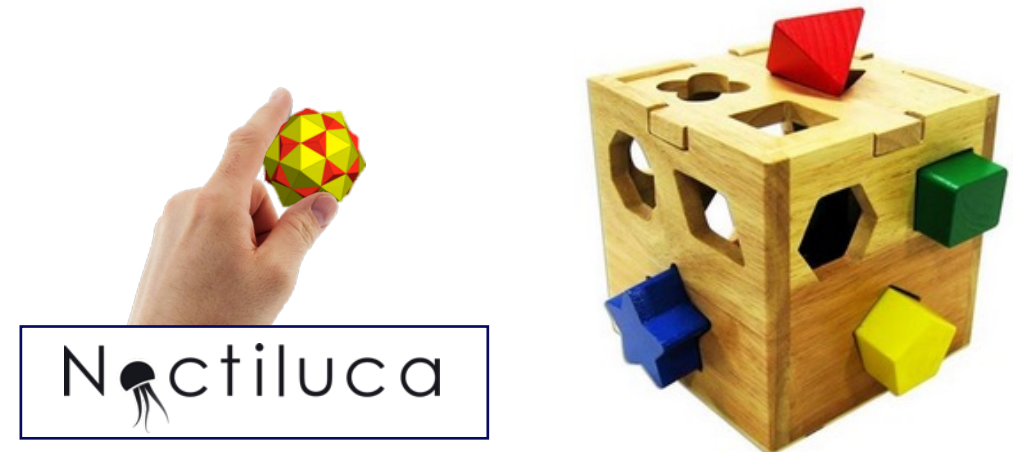
**EASY IMPLEMENTATION
IN CURRENT OLED TECHNOLOGY**



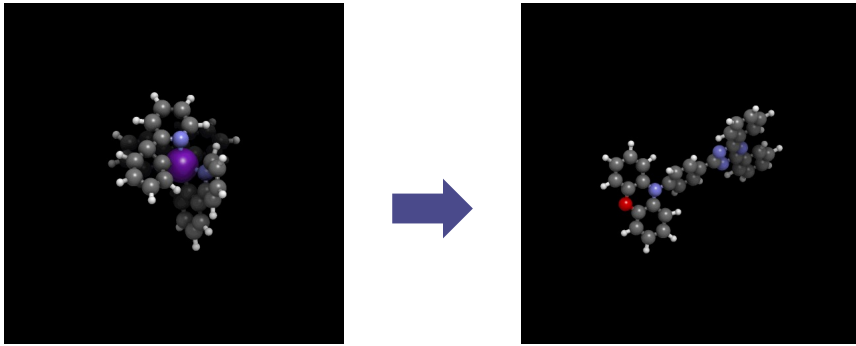
**ENABLING PRINTED
ELECTRONICS**

Noctiluca – better product, faster implementation

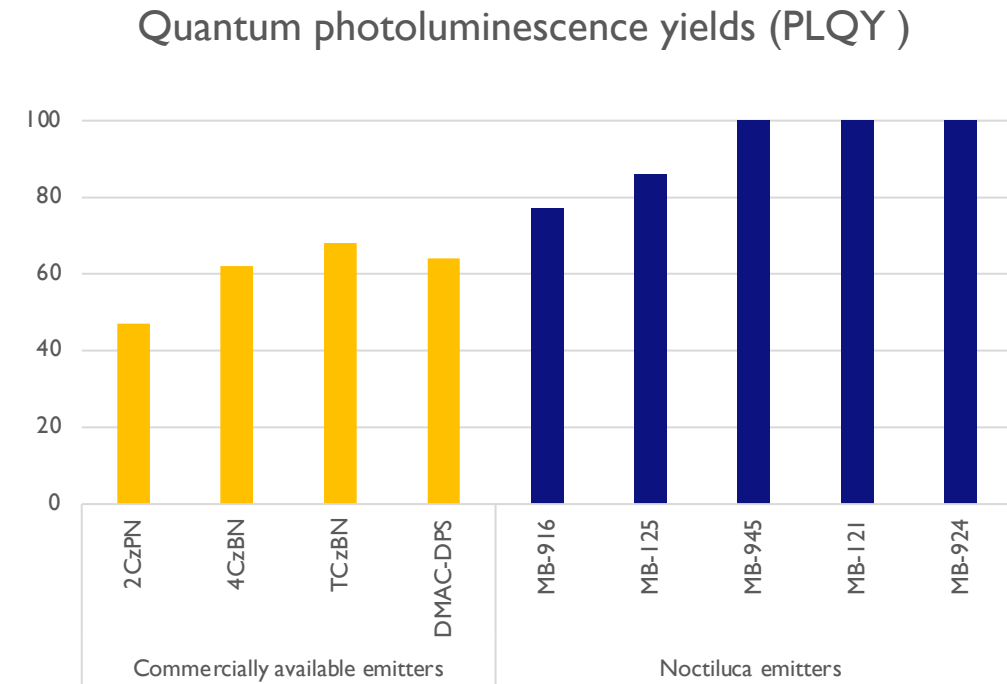
- Proprietary emitters with strong TADF properties
- Customer-centric approach shortens the commercialization process, eliminating the need to reiterate the design process of emitter structures, allowing to modify existing ones in a matter of weeks, not months



Noctiluca – better product, faster implementation



- Noctiluca's compounds from the FIRST family of blue emitters beat the QY parameters of commercially available TADF blue emitters
- Some of them are dedicated for PVD applications others for ink-jet printing

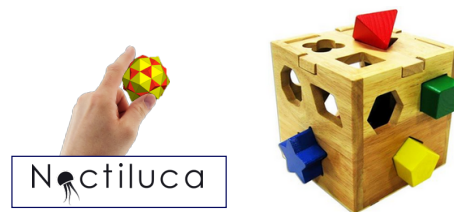


Business case for green emitter dedicated to IJP

Technical requirement provided by the partner

Maximum emission at 520 nm
 Emission peak width FWHM=70-90 nm
 HOMO / LUMO – 4.5-5.5/1.9-2.5 eV
 Triplet energy level 2.0-2.5 eV,
 Solubility – toluene >10 g/L, *i*-PrOH – insoluble
 Molecular weight – ca. 2000 Da

From a choice of over 200 proprietary compounds



2 month tweaking process

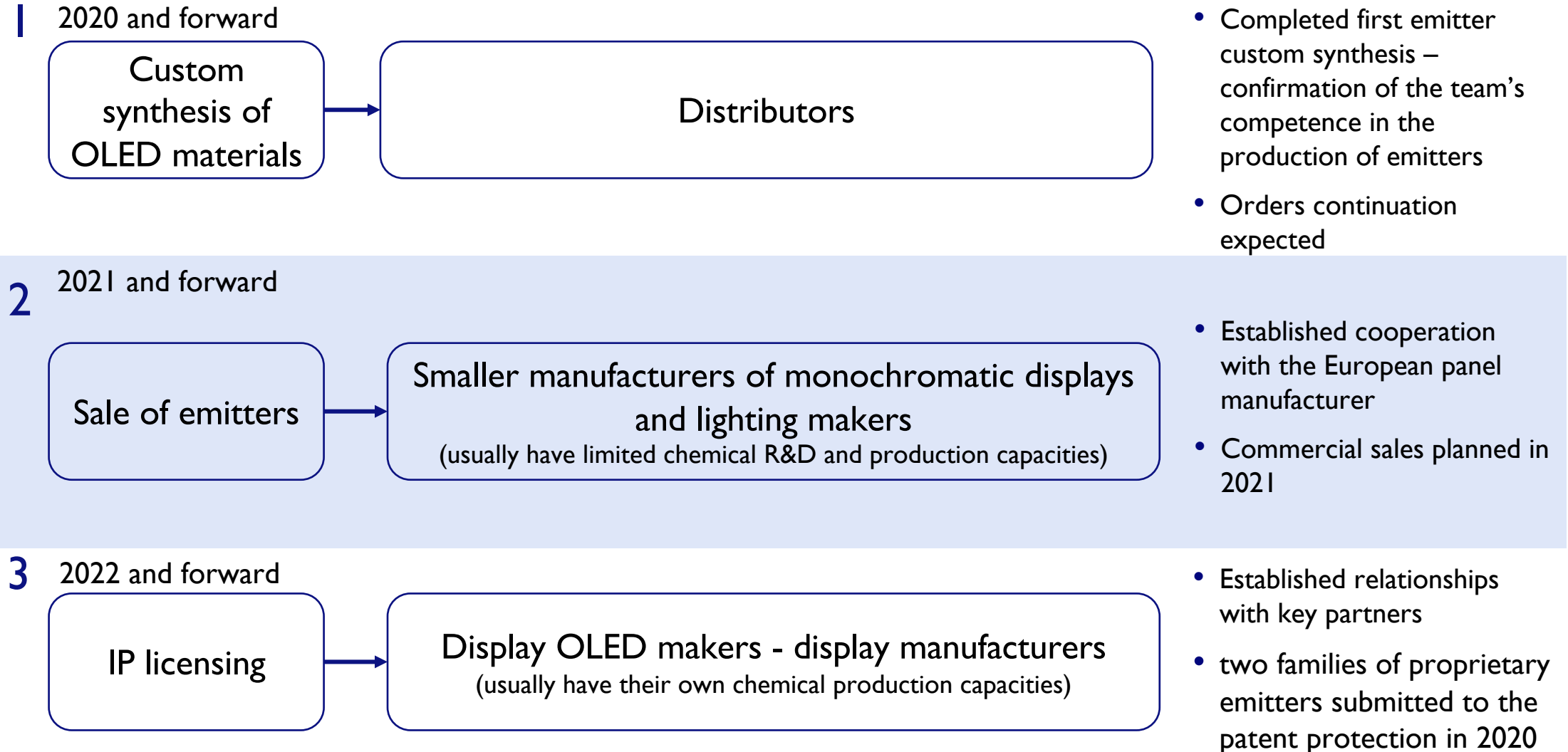
Provided emitter AZ-293

Maximum emission at 520 nm
 Emission peak width FWHM=74 nm, $\lambda_{\text{onset}}=410$ nm, decay=c.a. 750 ns
 HOMO / LUMO – 4.76/1.92 eV
 Triplet energy level 2.39 eV,
 Solubility – toluene 16 g/L, *i*-PrOH – insoluble
 Molecular weight – ca. 1820 Da

Provided emitter PT-581

Maximum emission at 522 nm
 Emission peak width FWHM=72 nm, $\lambda_{\text{onset}}=414$ nm, decay=c.a. 950 ns
 HOMO / LUMO – 5.38/2.31
 Triplet energy level 2.27 eV,
 Solubility – toluene 32 g/L, *i*-PrOH – insoluble
 Molecular weight – ca. 2350 Da

Business Model – IP licensing and own production



Experienced team with track record

MANAGEMENT TEAM

Mariusz Bosiak, PhD – CEO/CTO



Co-founder of the chemical technology company Synthex Technologies with 15 years of experience in the optoelectronic industry. An expert in the implementation of research projects together with industry, including the development of third generation solar dyes, which have been patented and implemented together with a leading industry player. He carried out projects for leading players in the agrochemical, pharmaceutical and renewable energy sectors: Chemirol, Sapec Agro Business, Ascenza Agro, Ciech Agro.x

Krzysztof Czaplicki – COO, Business Development



Experienced entrepreneur and manager of seed and VC funds. Since 2009, a partner at seed capital fund – investing in new technologies. He has an international experience gained while working for the World Bank Group. Expert in the assessment of intangible assets in companies.

Mateusz Nowak – Business Development



Manager and mentor with experience in realization of close to 100 projects ranging from creation and implementation of strategy, M&A and Due Diligence – ex-PwC, ex-VC, co-founder of MIT Enterprise Forum Poland

R&D TEAM CONSISTS OF 6 FURTHER HIGHLY ACCOMPLISHED PHDS FROM NICOLAUS COPERNICUS UNIVERSITY IN TORUŃ

ADVISORY TEAM

Sri Peruvemba



Board Member at Society for Information Display. His 25 years of experience in the electronics industry include marketing LCD, CRT, TFEL, OLED, LED, Plasma and ePaper displays in the mobile, industrial, medical, marking and television markets. Previously, he was CMO at E Ink Corporation (up from \$20m to \$1.4bn). He also held senior positions at Cambrios, Sharp Corp, TFS Inc, Planar Systems and Suntronic Technology.

Paweł Bochniarz



Experienced entrepreneur, mentor, advisor and expert in commercializing new technologies. The Chairman of the MIT Enterprise Forum Poland, served as Innovation Advisory Director at PwC.

Michał Olszacki, PhD



Co-founder and CEO of VC FUNDS PIBIR (Polish Institute of Research and Development) I and II, Expert in microsystems, electronics and silicon technologies. He holds a PhD at the Institut national des Sciences Appliquées de Toulouse.

Bogusława Cimoszko-Skowroński



Investment banker, corporate finance specialist and VC fund manager in the USA, Switzerland, and Poland. Her experience includes Exxon Chemical, EBRD, UBS, Fincoord. She graduated from MIT and MBA at Harvard Business School.

Why we'll succeed?

- Proprietary, IP-protected emitter families in 1st, 3rd and 4th generation;
- Excellent and very good emitter TADF properties (e.g. Quantum Efficiency, Lifetime, CIEy);
- Simple molecule synthesized in 2-3 steps;
- Short custom synthesis process of just a few weeks vs. months;
- Low production cost;
- Solid Team – experienced in custom synthesis and custom manufacturing for global clients with billions of USD in revenues;
- Data – we collect reference data for our emitters from leading research institutions from Europe and Asia;

Summary

- Noctiluca is an ingredient brand company with proprietary emitters ready to shake up the display OLED material status quo - We don't make displays; we make displays great;
- 15 years of experience in the high-end chemistry to prove our execution excellence;
- Supremely valuable company since total investment into Noctiluca is a fraction of the competitors - with USD 1,5m raised, in 8 months we will deliver a commercial grade green emitter with a first client.

