

HORIZON
2020

Development of high-performance, hyperfluorescence OLEDs for use in display applications and solid state lighting

Fact Sheet

Project Information

HyperOLED

Grant agreement ID: 732013

[Project website](#) 

DOI

[10.3030/732013](#) 

Project closed

EC signature date

12 October 2016

Start date

1 January 2017

End date

31 December 2019

Funded under

INDUSTRIAL LEADERSHIP - Leadership in enabling and industrial technologies - Information and Communication Technologies (ICT)

Total cost

€ 3 556 208,02

EU contribution

€ 3 556 208,02

Coordinated by

MERCK
KOMMANDITGESELLSCHAFT
AUF AKTIEN



Germany

Objective

The overall goal of the HyperOLED project is to develop materials and matching device architectures for high-performance, hyperfluorescence organic light emitting diodes (OLEDs) for use in display applications and solid state lighting. The innovative OLEDs will be realised by combining thermally activated delayed fluorescence

(TADF) molecular hosts with novel shielded fluorescence emitters, targeting saturated blue emission of very high efficiency, especially at high-brightness levels. Further efficiency gains will be achieved through molecular alignment to enhance light outcoupling from the hyperfluorescence OLEDs. Using shielded emitters will enable simpler device structures to be used, keeping drive voltages low to be compatible with low voltage CMOS back plane electronics. This will enable demonstration of the concept's feasibility for high-brightness, full-colour OLED microdisplays as one application example.

To develop the hyperfluorescence OLEDs, the following scientific and technical objectives will be targeted:

- Objective 1: Develop shielded emitters
- Objective 2: Develop TADF hosts
- Objective 3: Photo-physically characterise the shielded emitters and TADF hosts
- Objective 4: Anisotropic molecular orientation for enhanced performance
- Objective 5: Design and test prototype hyperfluorescence OLEDs
- Objective 6: Fabricate and evaluate demonstration hyperfluorescence microdisplays

To show the project's overall goal has been achieved, multiple blue and white stack unit prototypes (2 x 2 mm² on 30x30mm glass substrates with ITO) will be integrated into a high-brightness microdisplay demonstrator (based on MICROOLED's 0.38" WVGA CMOS backplane) and tested that demonstrate significant improvements in functionality, performance, manufacturability and reliability.

Fields of science (EuroSciVoc)

[engineering and technology](#) > [materials engineering](#)



Programme(s)

[H2020-EU.2.1.1. - INDUSTRIAL LEADERSHIP - Leadership in enabling and industrial technologies - Information and Communication Technologies \(ICT\)](#)

MAIN PROGRAMME

Topic(s)

[ICT-02-2016 - Thin, Organic and Large Area Electronics](#)

Call for proposal

[H2020-ICT-2016-2017](#) 

[See other projects for this call](#)

Sub call

H2020-ICT-2016-1

Funding Scheme

[RIA - Research and Innovation action](#)

Coordinator



MERCK KOMMANDITGESELLSCHAFT AUF AKTIEN

Net EU contribution

€ 1 471 729,04

Total cost

€ 1 471 729,04

Address

FRANKFURTER STRASSE 250

64293 Darmstadt

 **Germany** 

Region

Hessen > Darmstadt > Darmstadt, Kreisfreie Stadt

Activity type

Private for-profit entities (excluding Higher or Secondary Education Establishments)

Links

[Contact the organisation](#)  [Website](#) 

[Participation in EU R&I programmes](#) 

[HORIZON collaboration network](#) 

Participants (4)



MICROOLED SARL

 France

Net EU contribution

€ 193 437,50

Address

7 PARVIS LOUIS NEEL BP 50 BHT BATIMENT 52

38040 Grenoble Cedex 09 

SME 

Yes

Region

Auvergne-Rhône-Alpes > Rhône-Alpes > Isère

Activity type

Private for-profit entities (excluding Higher or Secondary Education Establishments)

Links

[Contact the organisation](#)  [Website](#) 

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[HORIZON collaboration network](#) 

Total cost

€ 193 437,50



FRAUNHOFER GESELLSCHAFT ZUR FORDERUNG DER ANGEWANDTEN FORSCHUNG EV

 Germany

Net EU contribution

€ 556 719,03

Address

HANSASTRASSE 27C

80686 Munchen 

Region

Bayern > Oberbayern > München, Kreisfreie Stadt

Activity type

Research Organisations

Links

[Contact the organisation](#)  [Website](#) 

[Participation in EU R&I programmes](#)
[HORIZON collaboration network](#)

Total cost
€ 556 719,03



UNIVERSITY OF DURHAM

United Kingdom
Net EU contribution
€ 1 120 259,95

Address
STOCKTON ROAD THE PALATINE CENTRE
DH1 3LE Durham
Region
North East (England) > Tees Valley and Durham > Durham CC

Activity type
Higher or Secondary Education Establishments

Links
[Contact the organisation](#) [Website](#)
[Participation in EU R&I programmes](#)
[HORIZON collaboration network](#)

Total cost
€ 1 120 259,95



INTELLIGENTSIA CONSULTANTS SARL

Luxembourg
Net EU contribution
€ 214 062,50

Address
35 CITE AM WENKEL
8086 Bertrange
SME
Yes
Region
Luxembourg > Luxembourg > Luxembourg

Activity type

Private for-profit entities (excluding Higher or Secondary Education Establishments)

Links

[Contact the organisation](#)  [Website](#) 

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Total cost

€ 214 062,50

Last update: 23 August 2022

Permalink: <https://cordis.europa.eu/project/id/732013>

European Union, 2025