LOMID - Large cost-effective OLED microdisplays and their applications

**Fact Sheet**

**Objective**

The LOMID project will define pathways to the manufacture of flexible OLED microdisplays with an exceptionally large area (16 mm x 20 mm, screen diagonal of 25.4 mm) at acceptably high yields (>65%).

This will be achieved by developing a robust silicon-based chip design allowing high pixel counts (1024x1280 (SXGA)) and high spatial resolution (pixel sizes of 10 µm x 10 µm corresponding to 2000 ppi). These display innovations will be coupled to a highly reliable manufacturing of the backplane. Cheap processes (e.g. based on 0.35 µm lithography) will be developed and special attention will be given to the interface between the top metal electrode of the CMOS backplane and the subsequent OLED layers. All these developments will be done on a 200 mm wafer scale. Along with this, a new testing procedure for quality control of the CMOS wafer (prior to OLED deposition) will be developed and promoted for standardisation.

The flexibility of the large area microdisplays will be achieved by wafer thinning to enable a bending radius of 45 mm. Along with the new functionality, the durability of the devices has to be guaranteed despite bending to be comparable to rigid devices. The project will address this by improving the OLED efficiency (e.g. operating lifetime > 15,000 hours) and by modifying the device encapsulation to both fulfil the
necessary barrier requirements (WVTR < 10^-6 g/d m2) and to give sufficient mechanical protection. The demand for and timeliness of these flexible, large area microdisplays is shown by the strong interest of industrial integrators to demonstrate the benefits of the innovative OLED microdisplays. Within the project, industrial integrators will validate the project’s microdisplays in smart glasses for virtual reality and to aid those with impaired vision.

Field of Science

/social sciences/psychology/cognitive psychology/mental processes/attention

Programme(s)

H2020-EU.2.1.1.1. - A new generation of components and systems: Engineering of advanced embedded and energy and resource efficient components and systems

Topic(s)

ICT-03-2014 - Advanced Thin, Organic and Large Area Electronics (TOLAE) technologies

Call for proposal

H2020-ICT-2014-1

See other projects for this call

Funding Scheme

RIA - Research and Innovation action

Coordinator

FRAUNHOFER GESELLSCHAFT ZUR FOERDERUNG DER ANGEWANDTEN FORSCHUNG E.V.

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Hansastrasse 27c
80686 Munchen
Germany

Activity type

Research Organisations

EU Contribution

€ 938 963,75

Website

Contact the organisation

Participants (8)
<table>
<thead>
<tr>
<th>Organisation</th>
<th>Country</th>
<th>EU Contribution</th>
<th>Address</th>
<th>Activity type</th>
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<td>LIMBAK 4PI SL</td>
<td>Spain</td>
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