

 Zawartość zarchiwizowana w dniu 2024-05-21

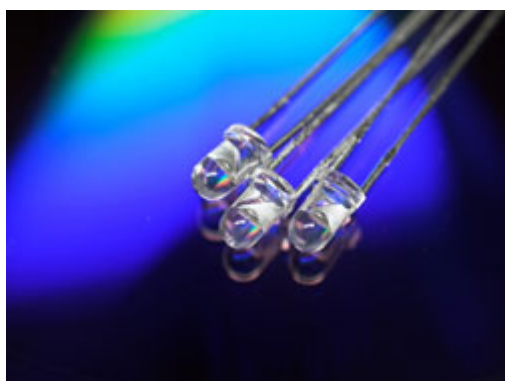


# Optical amplification in polymer based materials and devices

## Wyniki w skrócie

## Design improvements for optoelectronics devices

Advances in polymer-based optoelectronics materials offer solutions to today's increasing demand for light-emitting diode (LED) products with greater light output, efficiency and reliability than ever before.



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Polymer light-emitting diodes (PLEDs) have been introduced as promising candidates for the next generation displays, particularly for portable electronic devices. A number of inherent qualities, including full-spectrum colour displays and high brightness at low drive voltages, render PLEDs ideally suited for mobile phones, digital cameras and MP3 players.

However, one of the major concerns for their large-scale commercial exploitation remains their power efficiencies, since these are directly dependent on battery usage. High quality devices are continuously emerging through the use of new polymer-based optoelectronics materials; and therefore an explicit description of the contact (metal/polymer) region has become necessary.

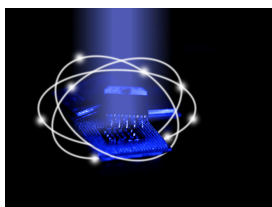
To accurately evaluate the current-voltage characteristics of organic material-based LEDs, a theoretical approach has been adopted within the OPAMD project for the

analysis of the contact phenomena. Researchers at the Technion-Israel Institute of Technology considered the contact region as an intrinsic part of the device and provided numerical simulations of the charge distribution for the entire device.

On the basis on their results, LEDS that can operate at a voltage as low as 3V and demonstrate fast switching times of a few nanoseconds were designed and manufactured. Technion researchers moving one step further explored the possibility of using a new generation of polymers exhibiting high mobility.

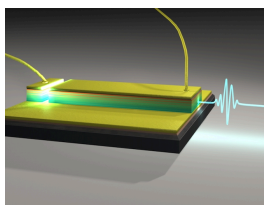
At extremely high modulation frequencies of at least 500MHz, doped polymer LEDs manufactured at Technion offered high photoluminescence efficiency combined with a long operating lifetime. In the next phase of research, demonstrators of visible polymer LEDs will be benchmarked for future commercial exploitation.

## Znajdź inne artykuły w tej samej dziedzinie zastosowania



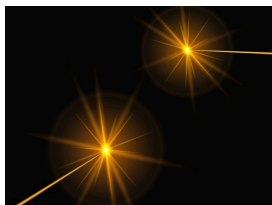
[A portal to speed up silicon photonics tech development](#)

7 Maja 2024 



[Pushing the boundaries of quantum cascade lasers](#)

4 Października 2019 



## True-yellow laser revolutionises treatment of eye and skin diseases

31 Października 2019



## Translucent, touch-sensitive wood is revolutionising construction

26 Lutego 2021



### Informacje na temat projektu

#### OPAMD

Identyfikator umowy o grant: G5RD-CT-2001-00577

Projekt został zamknięty

#### Data rozpoczęcia

1 Stycznia 2002

#### Data zakończenia

30 Czerwca 2005

#### Finansowanie w ramach


Programme for research technological development and demonstration on "Competitive and sustainable growth 1998-2002"

#### Koszt całkowity

€ 3 677 480,00

#### Wkład UE

€ 2 334 737,00

Koordynowany przez  
UNIVERSITY COLLEGE CORK,  
NATIONAL UNIVERSITY OF  
IRELAND, CORK  
 Ireland

Ten projekt został przedstawiony w...

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**Ostatnia aktualizacja:** 10 Grudnia 2007

**Permalink:** <https://cordis.europa.eu/article/id/83622-design-improvements-for-optoelectronics-devices>

European Union, 2025

