

Title (en)

OPTOELECTRONIC COMPONENT AND METHOD FOR A SPECTRALLY SELECTIVE DETECTION OF ELECTROMAGNETIC RADIATION

Title (de)

OPTOELEKTRONISCHES BAUELEMENT UND VERFAHREN ZUR SPEKTRAL SELEKTIVEN DETEKTION ELEKTROMAGNETISCHER STRAHLUNG

Title (fr)

COMPOSANT OPTOÉLECTRONIQUE ET PROCÉDÉ DE DÉTECTION SPECTRALEMENT SÉLECTIVE D'UN RAYONNEMENT ÉLECTROMAGNÉTIQUE

Publication

EP 4305682 A1 20240117 (DE)

Application

EP 22714161 A 20220311

Priority

- DE 102021106049 A 20210312
- EP 2022056338 W 20220311

Abstract (en)

[origin: WO2022189629A1] By directly exciting optical transitions in the intermolecular CT state, the wavelength range which can be detected by organic photodetectors can be expanded into the NIR or IR range, and the EQE is low even when using resonance effects by arranging the photoactive layer in an optical microcavity. The invention relates to an optoelectronic component (1, 1', 1'', 1''') and to a corresponding detection method in which the concentration of the donor compound in the photoactive layer (2) or the concentration of the acceptor compound in the photoactive layer (2) is so low that the compound with a low concentration provides trap conditions for the corresponding charge carriers (81), said conditions producing a photo-induced accumulation of the charge carriers (81) paired with the compound with a low concentration in a region of the photoactive layer (2) facing the first electrode (31) so that charge carriers (82) paired with the highly concentrated compound are injected into the photoactive layer (2) from the first electrode (31), whereby the charge carrier locations are predominantly in the component (1, 1', 1'', 1'''). In particular, the EQE increase achieved in this manner is advantageous in that the detectable wavelength range can be expanded to higher wavelengths by means of the invention.

CPC (source: EP US)

G01J 5/10 (2013.01 - US); **H10K 30/30** (2023.02 - EP); **H10K 30/87** (2023.02 - EP); **H10K 30/50** (2023.02 - EP); **H10K 85/211** (2023.02 - EP); **H10K 85/311** (2023.02 - EP)

Designated contracting state (EPC)

AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

Designated extension state (EPC)

BA ME

Designated validation state (EPC)

KH MA MD TN

DOCDB simple family (publication)

DE 102021106049 A1 20220915; EP 4305682 A1 20240117; US 2024159593 A1 20240516; WO 2022189629 A1 20220915

DOCDB simple family (application)

DE 102021106049 A 20210312; EP 2022056338 W 20220311; EP 22714161 A 20220311; US 202218549834 A 20220311