

【本件リリース先】

文部科学記者会、科学記者会、
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NEWS RELEASE

本件の報道解禁につきましては、
令和4年2月7日(月)23時以降に
お願いいたします。

4 2 4

LED

LED

LED

LED

20

SiO₂

LED

21

LED

LED

LED

LED

LED

SDGs

Orange-Red Si Quantum Dot LEDs from Recycled Rice Husks

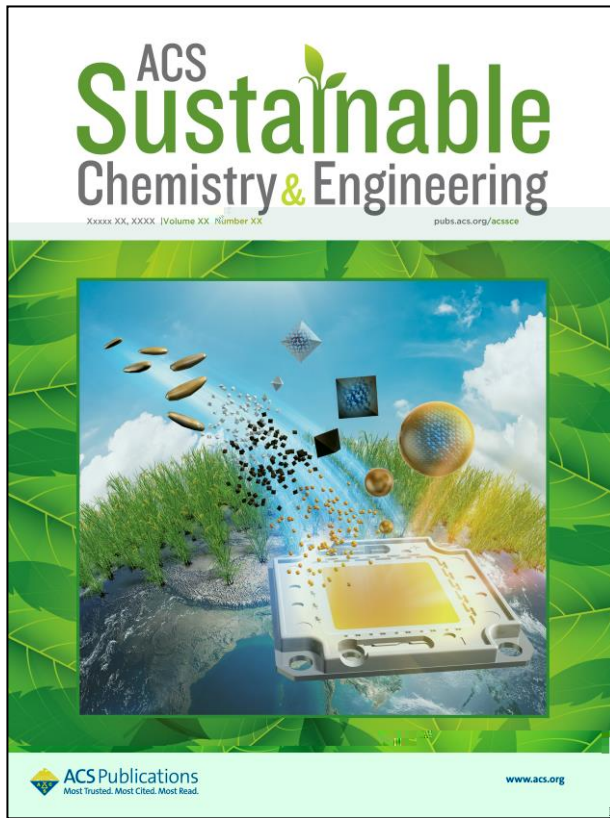
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- 1.
 - 2.
 - 3.
- *

2022 2 7

ACS Sustainable Chemistry & Engineering (IF=8.198)

<https://doi.org/10.1021/acssuschemeng.1c04985>



SiO_2 20 1
 2013 SiO_2 5 10 1
 5 LED 10
 0.01 TV 1
 SiQD 2012 SiQD LED 2015 SiQD 2009
 2020 2022 1 SiQD LED 1/380 80 SiQD
 SiQD LED 21 SiQD SiQD LED

LED

SiO₂

1

100

86

2

1-2

3

21

LED

4

LED

3

LED

2cm

4mm²

LED

EL

LED

LED

LED

40

LED

LED

SDGs17

12

15

1)

5

2)

3)

EL

3-4

4)

LED

LED

2026

86

LED

SDGs

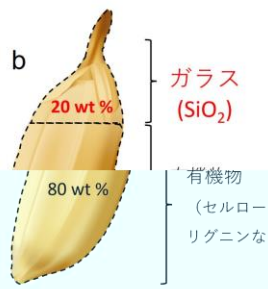
8

9

a



b



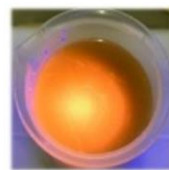
ガラス (SiO₂)

有機物 (セルロース、リグニン)

水素修飾のSiQD

デシル基修飾のSiQD

a



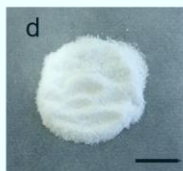
b



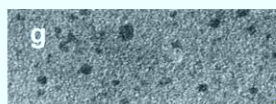
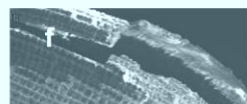
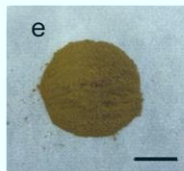
c



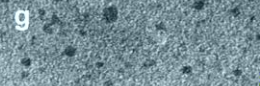
d



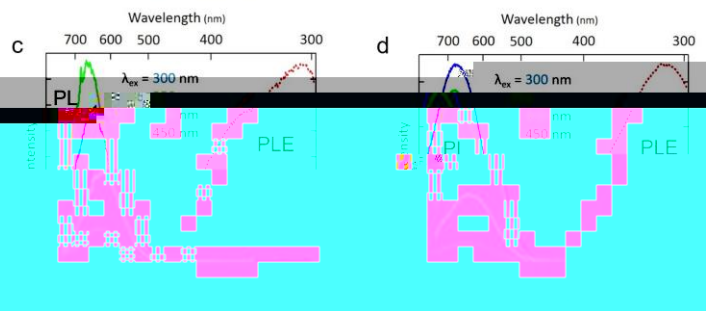
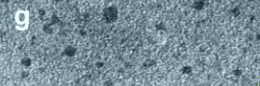
e



f



g



2

(a)

1-2

(b)

21

(c)

(d) (b)

1 (a)

(c)

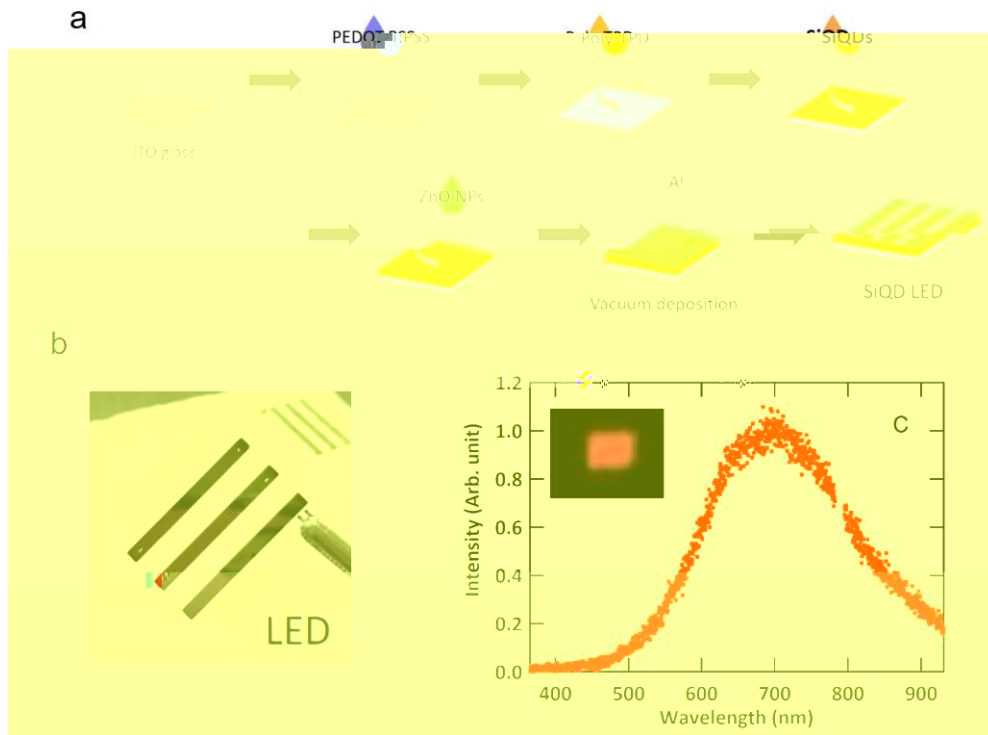
(d)

(b)

(e)

(f)

(g)



3 (a)

LED LED

2 × 2 cm² (b)

(c)

4 mm²

1

80

80

3

4

LED

C₁₀H₂₁

1000

100

5

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