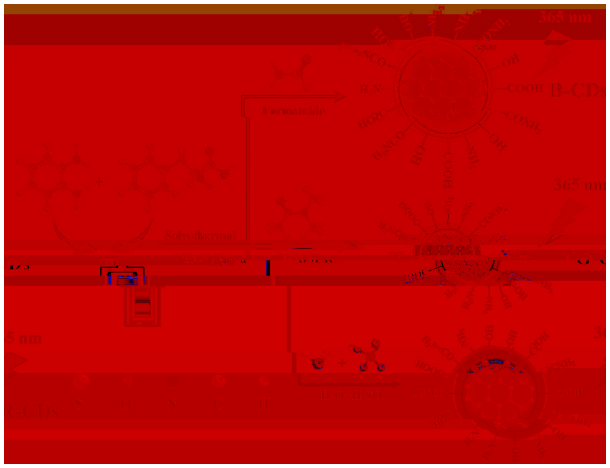
Cite this: *New J. Chem.*, 2022, **46**, 4979

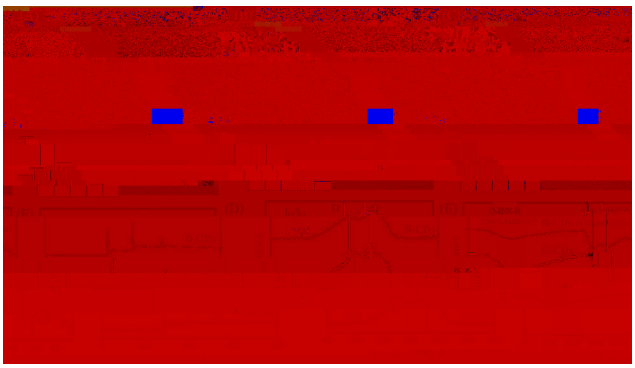
RGB-multicolor fluorescent carbon dots by changing the reaction solvent type for white light-emitting diodes†

L , [a] D L, [bc] C , [bc] Q , Lt , [bc] Q , [bc] J , [c]
B H , *[bc] G , H , [bc] B , A *[a]

In this study, carbon dots with blue, green, and red full spectrum emission were successfully prepared by changing the reaction solvent type for white light-emitting diodes.



Sc 1 P GB- t CD.



F. . 2 EM H EM (A) B-CD , (B) G-CD , (C) -CD ; (D) B-CD , G-CD , -CD ; (E) F -I B-CD , G-CD , -CD ; (F) P B-CD , G-CD , -CD .

o-

N,N-

o-

1

1 , 1 ,

( )

1 ,

( ), = = π π*

π* = /

. .1 . 1 (†),

-, -, . %, . %,

1 . %, . (†),

-, -,

. , .1 . ,

( ) (.)

1. , . , 1. -,

-, - , . - ( )

.1 , 1( )

I /*I* -, -,

(.) . , . 1 . ,

. - ( ) . (†)

. °, ( )

(-)

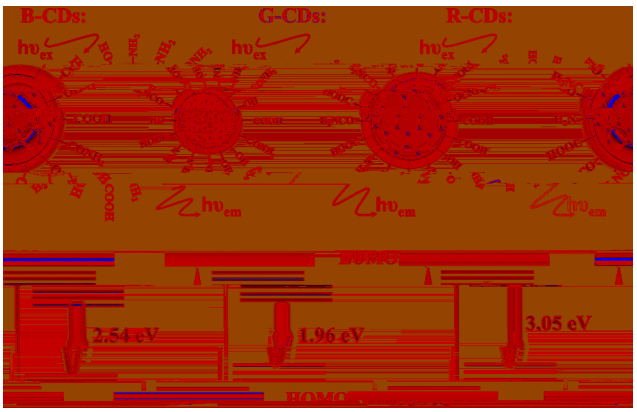
. -, -,

/ (+), =

1(+), = 1(1 +)

= -, -,

F. . 1 A PL (A) B-CD , (B) G-CD , (C) -CD . 365 ( ). PL (D) B-CD , (E) G-CD , (F) -CD .


B-CDs:
G-CDs:
R-CDs:
2.54 eV
1.96 eV
3.05 eV

(†).

C

C

Ac

(1 &).

N a c

1 *Adv. Sci.*, 8,
Nat. Commun., 9,
Small, 15, 1
Nanoscale Horiz., 5, 1
ACS Appl. Mater. Interfaces, 12,
Anal. Chem., 92, 1 1
Angew. Chem., Int. Ed., 60,
Chem. Eng. J., 382,
Nano Res., 8, 1
1 *Sci. Bull.*, 66,
11 *J. Phys. Chem. Lett.*, 12, 1
1 *Sci. Adv.*, 6,
1 *Adv. Mater.*, 29,
1 *ACS Nano*, 10, 1
1 *J. Mater. Chem. C*, 3,
1 *Angew. Chem., Int. Ed.*, 59,
1 *Nano Res.*, 12, 1
1 *Adv. Sci.*, 8,
1 *Nat. Photonics*, 14, 1 1
J. Mater. Sci., 48,
1 *Adv. Mater.*, 28,
Nat. Commun., 12,
Nanoscale, 9, 1
Adv. Mater., 29,
Adv. Opt. Mater., 9, 1
Adv. Mater., 30,
ACS Appl. Mater. Interfaces, 13,
Chem. – Eur. J., 26, 1 1
Angew. Chem., Int. Ed., 60, 1
ACS Nano, 11, 1 1