Electronic Supplementary Material (ESI) for Nanoscale Advances.

SUPPORTING INFORMATION

Role of corrugated Dion-Jacobson 2D perovskite as additive in 3D $MAPbBr_3$ perovskite-based light emitting diodes

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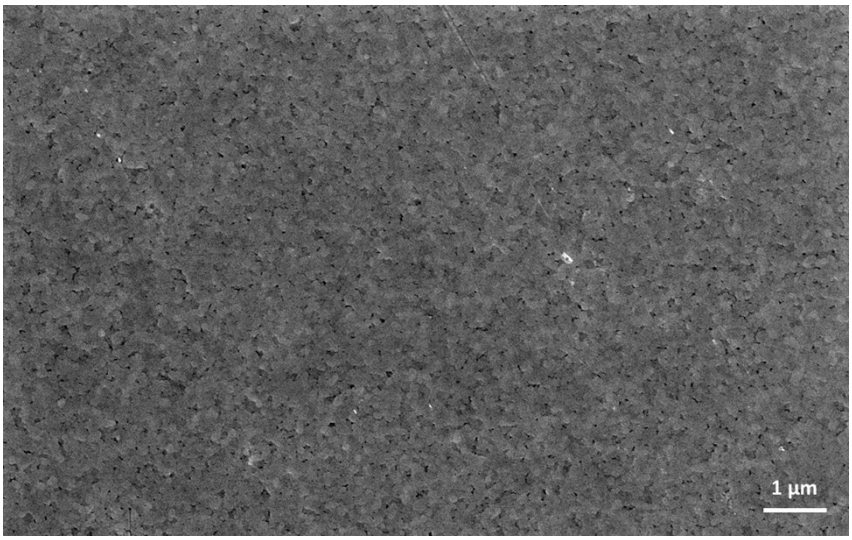

Figure S1: SEM picture of $MaPbBr_3$ 3D perovskite

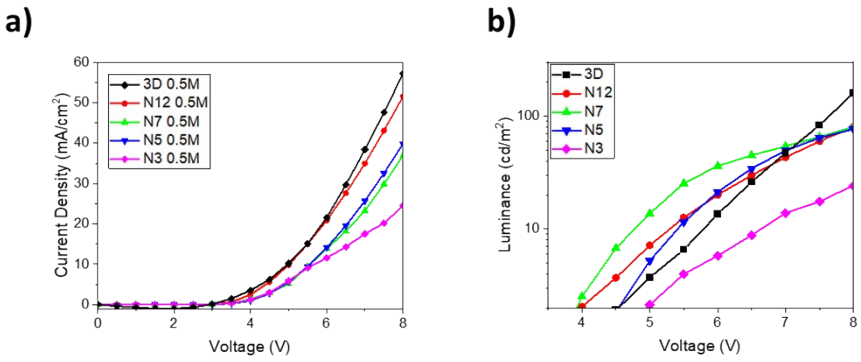

Figure S2: a) current density vs voltage curves for LED devices obtained with 3D, N12, N7, N5 and N3 thin films (0.5M); b) luminance vs voltage curves for LED devices obtained with 3D, N12, N7, N5 and N3 thin films (0.5M)

Table S1: Luminance, Current Efficiency and EQE of LED devices obtained with 3D, N12, N7, N5 and N3 thin films (0.5M)

	Lum. (cd/m²)	CE (cd/A)	EQE (%)
3D	160 @ 8V	0.28 @ 8V	0.08 @ 8 V
N12	80 @ 8V	0.16 @ 8V	0.04 @ 8V
N7	80 @ 8V	0.22 @ 8V	0.07 @ 8V
N5	77 @ 8V	0.19 @ 8V	0.07 @ 8V
N3	24 @ 8V	0.10 @ 8V	0.03 @ 8V

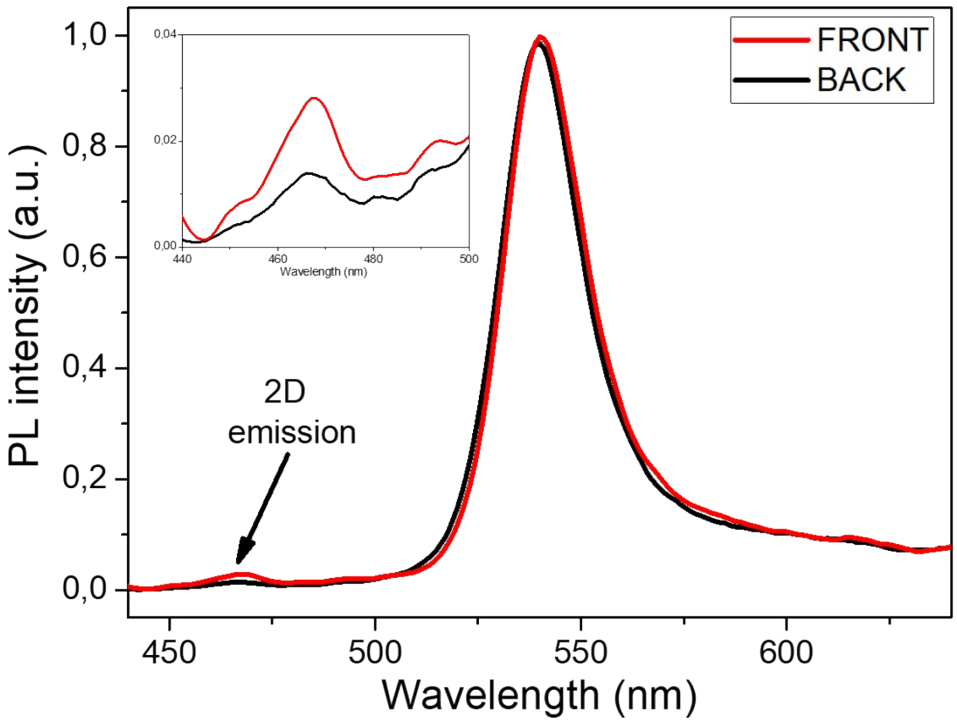

Figure S3: PL spectra of the 3D/2D bilayer from the "front" and the "back"

Table S2: Summary table related to employment of 2D DJ perovskites in LED devices

REF	Perovskite structure	Device architecture	EQE (%)	Operational stability (T50)
[1]	BAB-$FAPbI_3$ (BAB = 1,4-bis(aminomethyl)benzene)	ITO/ZnO/PEIE/perovskite/TFB/MoO_3/Al	5.2%	100 h
[2]	EDBE$(MAPbBr_3)_{n-1}PbBr_4$ (EDBE: 2,2-(ethylenedioxy)bis (ethylammonium))	ITO/PEDOT:PSS/perovskite/TPBi/LiF/Al	1.06	n.a.
[3]	$PbBr_2$:MABr:BDADBr (1,4-diaminobutane hydrobromide)	ITO/PEDOT:PSS/perovskite/TmPyPB/CsF/Al	1.1	3500 s
[4]	PbI_2: CsI: MAI: mXDA (m-xylylenediamine)	ITO/ZnO/PEIE/perovskite/TFB/MoO_3/Ag	12%	n.a.

[5]	$BDAFA_{n-1}PbnI_{3n+1}$ (BAD = 1,4-butanediamine)	ITO/ZnO/PEIE/perovskite/TFB/MoO_3/Au	9	189.4 h
[6]	DPDA-$CsPb(Br/Cl)_3$ (DPDA = N,Ndimethyl-1,3-propanediamine)	ITO)/modified-(PEDOT:PSS)/perovskites/TPBi)/ (Liq)/aluminum (Al)	2.65	n.a.
[7]	$(PDMA)FA_2Pb_3X_{10}$ (PDMA = p-xylylenediamine)	ITO/ZnO/PEIE/perovskite/TFB/MoO_3/Au	7.1	n.a.
This work	$MAPbBr_3$/α(DMEN)$PbBr_4$ (α(DMEN) = (dimethylamino)ethylamine)	ITO/PEDOT:PSS/perovskite/BPhen/BPhen:Cs/Ag	0.27	1400 s

T50 = time that the device takes for the luminance to drop to half its initial value during constant applied voltage

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