Title:	Oxadiazole-integrated heterocoronene discotics as ambipolar organic semiconductors
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Abstract:	The development of modern technologies has driven a quest for new semiconducting materials in optoelectronics, where self-assembled liquid crystal (LC) materials can play a potential role. The molecular engineering of disc-shaped LCs (DLCs) with suitable organic moieties, especially heterocyclic units, can lead to control over their columnar architecture in the nano-scale regime, which holds the key to tuning the charge-transport properties of the system. Here, we have successfully designed and synthesized room-temperature DLCs (1.1, 1.2 and 1.3) with 1,3,4-oxadiazole functional units acting as electron-deficient linkers between a central heterocoronene core and the peripheral alkoxy phenyl units. All the derivatives exhibited a broad columnar hexagonal mesophase range with high isotropic temperatures. When employed in space-charge limited current (SCLC) devices, they showed ambipolar charge transport behaviour in thin films, with maximum hole and electron mobilities of the order of 10−3 and 10−5 cm2 V−1 s−1, respectively.
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