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Emissive Liquid Crystalline Boron *C*,*N*-Chelates: Synthesis, Self-assembly and Photophysical Properties

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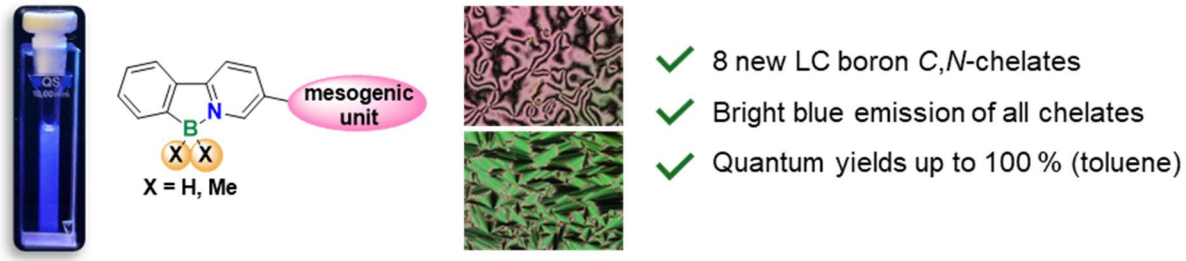
A series of novel phenylpyridine-based boron *C*,*N*-chelates containing mesogenic units was synthesized and systematically studied. [1] The influence of side chain type, length and number, as well as the effect of boron substitution (BH_2 vs. BMe_2) on mesomorphic and photophysical properties was examined. [2] All BH_2 derivatives exhibited SmA or nematic phases, even when short alkyl chains were present. In contrast, the corresponding BMe_2 compounds showed no mesomorphic behavior unless a semi-perfluorinated chain was introduced. This observation highlights the strong impact of boron substitution on the formation of mesophases. All compounds displayed intense blue emission in solution. Their photophysical properties were mainly determined by the boron *C*,*N*-chelate core. Only minor shifts were observed upon variation of the mesogenic unit, in agreement with DFT calculations. Quantum yields of up to 100% were achieved in solution. Overall, the results demonstrate that mesomorphic behavior can be introduced and tuned without compromising the photophysical performance of the boron *C*,*N*-chelate system. [2]



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