Fused Polycyclic π-Conjugated Skeletons with Unusual Electronic Structures

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The progress in organic electronics and optoelectronics highly relies on the development of new superb π-conjugated materials. In this regard, our efforts have been particularly focusing on the development of new π-conjugated skeletons with unusual electronic structures. Our approaches are based on the designs exploiting the features of main group elements, such as boron and phosphorus, and also on the development of efficient synthetic methodologies for fused polycyclic π-conjugated skeletons. In this lecture, some recent results along these lines will be presented, including the synthesis of ladder π materials with highly antiaromatic characters, and structurally constrained π-conjugated scaffolds with intriguing properties.