

茨城大学公開特許

発明の名称	新規な含窒素複素環化合物、それよりなる電子輸送材料及びそれを含む有機発光素子と太陽電池
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技術分野	ナノテクノロジー・材料・計測
発明の概要	【課題】 n共役性、溶解性、成膜性、及び安定性に優れる含窒素複素環化合物の提供。 【解決手段】 式（１）で示される太陽電池等の材料として有用な含窒素複素環化合物。
説明図	The diagram illustrates the synthesis of a macrocyclic compound [B] and its subsequent reaction. At the top, a lithium salt [A] (a pyridine ring with a lithium atom at the 4-position and a substituent X at the 2-position) reacts with a macrocyclic alkene. The macrocyclic alkene is a large ring containing a double bond and several substituents: R₁₁, R₁₂, R₂₁, R₂₂, R₃₁, R₃₂, R₄₁, R₄₂, R₅₁, and R₅₂. The reaction is labeled with a downward arrow and the text "シクロアルキレン化合物" (cycloalkylene compound). The product [B] is a macrocyclic compound where the lithium salt [A] has been incorporated into the ring structure. Below [B], a downward arrow labeled "+ Oxidant" and "Scholl 反応" (Scholl reaction) leads to a set of three polycyclic products labeled [C1], [C2], and [C3]. These products are collectively labeled [C]. Each product [C1], [C2], and [C3] is a polycyclic compound consisting of a macrocyclic ring fused to a pyridine ring, with various substituents.