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(54) ORGANIC ELECTROLUMINESCENT MATERIALS AND DEVICES

(71) Applicant: UNIVERSAL DISPLAY CORPORATION, Ewing, NJ (US)

(72) Inventors: Hsiao-Fan CHEN, Lawrence Township, NJ (US); Rasha HAMZE, Philadelphia, PA (US); Morgan C. MACINNIS, Yardley, PA (US); Nicholas J. THOMPSON, New Hope,

PA (US)

(73) Assignee: UNIVERSAL DISPLAY **CORPORATION**, Ewing, NJ (US)

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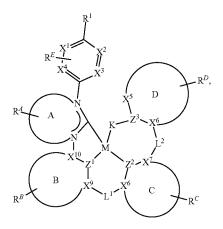
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(57)ABSTRACT

A compound having a structure of Formula I,



is provided. In Formula I, M is Pt or Pd; rings A, B, C, and D are 5-membered or 6-membered rings; one of Z^1 , Z^2 , and Z^3 is N and the other two are C; each of X^1 to X^{10} is C or N; K is a direct bond, O, S, N(R $^{\alpha}$), P(R $^{\alpha}$), B(R $^{\alpha}$), C(R $^{\alpha}$)(R $^{\beta}$), or Si(R $^{\alpha}$)(R $^{\beta}$); each of L¹ and L² is a direct bond or a linker; each R, R', R'', R $^{\alpha}$, R $^{\beta}$, R A , R B , R C , R D , and R E is hydrogen or a General Substituent; R¹ is a substituent; at least one R^E comprises a substituent selected from the group consisting of aryl, heteroaryl, cycloalkyl, and heteroalkyl; any two substituents may be joined or fused to form a ring, except that R^E at X^3 or X^4 cannot be joined with R^A to from a ring. Formulations, OLEDs, and consumer products including the compound are also provided.

