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(54) Title: ELECTROCHEMILUMINESCENT RHENIUM MOIETIES AND METHODS

(57) Abstract

Electrochemiluminescent moieties having the formula $(\text{Re}(\text{P})_m(\text{L}^1)_n(\text{L}^2)_o(\text{L}^3)_p(\text{L}^4)_q(\text{L}^5)_r(\text{L}^6)_s\text{L}(\text{B})_u)$ in P is a polydentate ligand of Re; L^1 , L^2 , L^3 , L^4 , L^5 and L^6 are ligands of Re, each of which may be the same as or different from each other ligand; B is a substance which is a ligand of Re or is conjugated to one or more of p, L^1 , L^2 , L^3 , L^4 , L^5 or L^6 ; m is an integer equal to or greater than 1; each of n, o, p, q, r and s is zero or an integer; t is an integer equal to or greater than 1; and u is an integer equal to or greater than 1; p, L^1 , L^2 , L^3 , L^4 , L^5 , L^6 and B being of such composition and number that the chemical moiety can be induced to emit electromagnetic radiation and the total number of bonds to Re provided by the ligands of Re being equal to the coordination of Re are disclosed. Qualitative and quantitative electrochemiluminescent assays for analytes of interest present in multicomponent liquids using these moieties are disclosed. These methods comprise contacting a sample with a reagent labeled with an electrochemiluminescent chemical moiety containing rhenium and capable of combining with the analyte of interest, exposing the resulting sample to chemical, electrochemical, or electromagnetic energy and detecting electromagnetic radiation emitted by the electrochemiluminescent chemical moiety.

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