Synthesis and Crystal Structure of the Pseudosandwich-Type Heteropolytungstates Functionalized by Organometallic Ruthenium(II)

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Figure S1. Combined polyhedral/ball and stick representation of the 2D structure of KNa₆[(RuC₆H₆)AsW₉O₃₄]·17H₂O (As-1), and Na₇[(RuC₆H₆)PW₉O₃₄]·14H₂O (P-2). The balls represent ruthenium (yellow), oxygen (red), sodium (blue) and carbon (gray). The AsO₄/PO₄ tetrahedron is green and the WO₆ octahedra are red. No hydrogens shown for clarity.
**Figure S2.** Combined polyhedral/ball and stick representation of the 3D structure of KNa$_6$[(RuC$_6$H$_5$)AsW$_9$O$_{34}$]·17H$_2$O (**As-1**). The color code is same as in Figure S1. No hydrogens shown for clarity.
Figure S3. Combined polyhedral/ball and stick representation of the 3D structure of Na$_7$[(RuC$_6$H$_6$)PW$_9$O$_{34}$]·14H$_2$O (P-2).
Figure S4. The TG curves for compounds As-1 and P-2.
**Figure S5.** The simulative (red line) and experimental (black line) powder X-ray diffraction patterns for compounds As-1 and P-2.
Figure S6. Cyclic voltammograms of [(RuC₆H₆)X₉W₉O₃₄]⁺⁻ (X = As, 1; P, 2) in a pH 3 medium (1.0 M LiCl + HCl) at scan rates of 10, 20, 50, 80, 100, 150, 200, 250, and 300 mV·s⁻¹. The inset shows the relationship of the square roots of the scan rates vs. the oxidation peak currents of W and reduction peak currents of W. Polyanion concentration: 4.4 × 10⁻⁴ M. The scan rate was 50 mV·s⁻¹. The working electrode was glassy carbon, and the reference electrode was Ag/AgCl. (A) [(RuC₆H₆)As₉W₉O₃₄]⁺⁻ (1). (B) [(RuC₆H₆)PW₉O₃₄]⁺⁻ (2).
Figure S7. Cyclic voltammograms of $4.4 \times 10^{-4}$ M As-1 in pH 3 medium (1M LiCl + HCl) in the absence (dot) and presence of nitrate (1M) (solid). The scan rate was 2 mV·s$^{-1}$; the working electrode was glassy carbon and the reference electrode a Ag/AgCl electrode.
Figure S8. IR spectra for compounds As-1 and P-2.