Evolution of the Spin Magnetic Moments and Atomic Valence of Vanadium in $\text{VCu}_x^+$, $\text{VAg}_x^+$, and $\text{VAu}_x^+$ Clusters ($x = 3 - 14$)

–Supporting Information–

William H. Blades,\textsuperscript{1,2} Arthur C. Reber,\textsuperscript{1} Shiv N. Khanna,\textsuperscript{*1} Luis López-Sosa,\textsuperscript{3} Patrizia Calaminici,\textsuperscript{*3} Andreas M. Köster\textsuperscript{3}

\textsuperscript{1} Department of Physics, Virginia Commonwealth University, Richmond, VA 23284, USA
\textsuperscript{2} Department of Materials Science and Engineering, University of Virginia, Charlottesville, VA 22904, USA
\textsuperscript{3} Departamento de Química, CINVESTAV, Av. Instituto Politécnico Nacional 2508, A.P. 14-740, México D.F. 07000 MEXICO
Figure S1 Copper, silver, gold, and vanadium binding energies of $\text{VCu}_n^+$, $\text{VAg}_n^+$, and $\text{VAu}_n^+$ ($n = 2 – 14$).
Figure S2. The average bond distance between the vanadium atom and the surrounding copper, silver, and gold atoms are plotted. While V$_{Cu_n}^+$ and V$_{Ag_n}^+$ have relatively steady trends, there is an even-odd effect in gold between $n = 2 – 8$. 
Figure S3. Average Orbital Energy of the S, P, and 3d/D orbitals of VX$_{2-14}^+$ (X= Cu, Ag, and Au).
**Figure S4.** Delocalized orbital width of VX$_{2-14^+}$ ($X =$ Cu, Ag, and Au). These values were obtained by subtracting the highest energy value associated with the S, P, and 3d/D orbital by the lowest energy value of that same orbital.