Supporting Information:

Thermally Induced A'-A Site Exchange in Novel Layered Perovskites $\text{Ag}_2[\text{Ca}_{1.5}\text{M}_3\text{O}_{10}]$ ($\text{M} = \text{Nb}, \text{Ta}$)

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Figure S4. Evolution of powder X-ray diffraction patterns of $\text{Ag}_2[\text{Ca}_{1.5}\text{Nb}_3\text{O}_{10}]$ as a function of temperature (marked in $^{\circ}\text{C}$ alternately on the right and left) on heating and subsequent cooling. Indexing of representative peaks are indicated with a, b, c, and d for (0 0 10), (1 1 7), (2 0 0), and (0 2 0) respectively. Only a portion of the pattern is shown for clarity. The arrow on the right shows the progress of the measurement.

Figure S5. Evolution of powder X-ray diffraction patterns of $\text{Ag}_2[\text{Ca}_{1.5}\text{Ta}_3\text{O}_{10}]$ as a function of temperature (marked in °C on the left) on heating and subsequent cooling (bottom to top). Indexing of representative peaks are indicated with a, b, c, and d for (0 10 0), (1 7 1), (2 0 0), and (0 0 2) respectively. Only a portion of the pattern is shown for clarity. The arrow on the right shows the progress of the measurement.

Figure S6. Evolution of powder X-ray diffraction patterns of $\text{Ag}_2[\text{Sr}_{1.5}\text{Nb}_3\text{O}_{10}]$ as a function of temperature (marked in °C on the left) on heating (bottom to top). Indexing of representative peaks are indicated with a, b, c, d, and e for (0 0 10), (1 1 7), (2 0 0), (0 0 2) and (0 2 2) respectively. Only portion of the pattern is shown for clarity. The arrow on the right shows the progress of the measurement.

Figure S7: Plot of intensity ratio of 00l reflections vs. temperature for $\text{Ag}_2[\text{Ca}_{1.5}\text{Nb}_3\text{O}_{10}]$. Squares, triangles and circles represent respectively the intensity ratio of I_{0014}/I_{008} , I_{0014}/I_{006} and I_{008}/I_{006} . The (0 0 l) reflections which do not overlap with any other (h k l) reflections were selected for the plot.