

FIGURE S1. TEM images of (a) chrysotile, (b) lizardite, and (c) antigorite. Inset images are schematic diagrams of their respective structures, with yellow tetrahedra, purple tetrahedra, light green octahedra, and purple octahedra representing SiO₄, AlO₄, Mg(O,OH)₆, and Al(O,OH)₆, respectively.

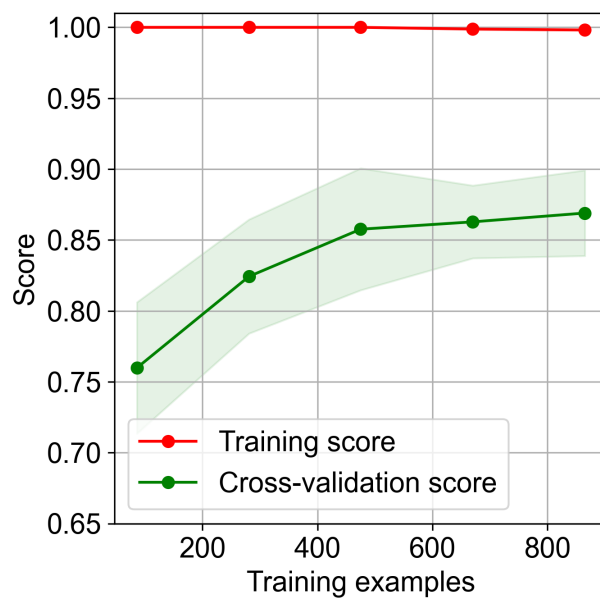


FIGURE S2. The XGBoost learning curve when using the eight selected major elements to classify L_Srp and H_Srp.

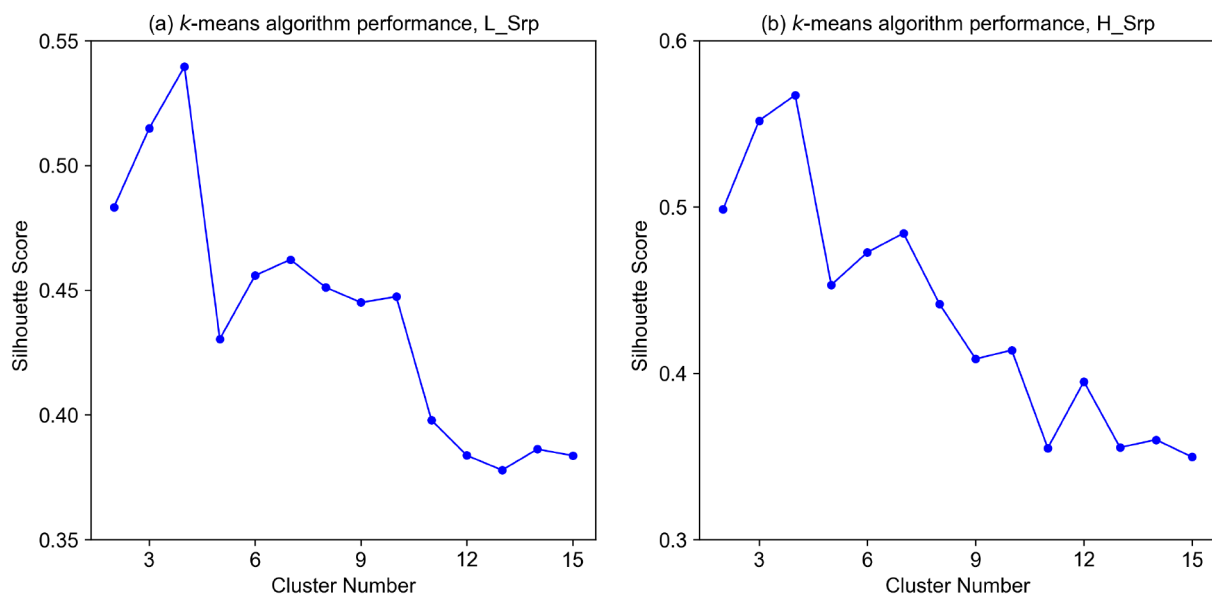


FIGURE S3. Silhouette scores used to select the optimum number of clusters *k* when applying the *k*-means algorithm to (a) L_Srp and (b) H_Srp.

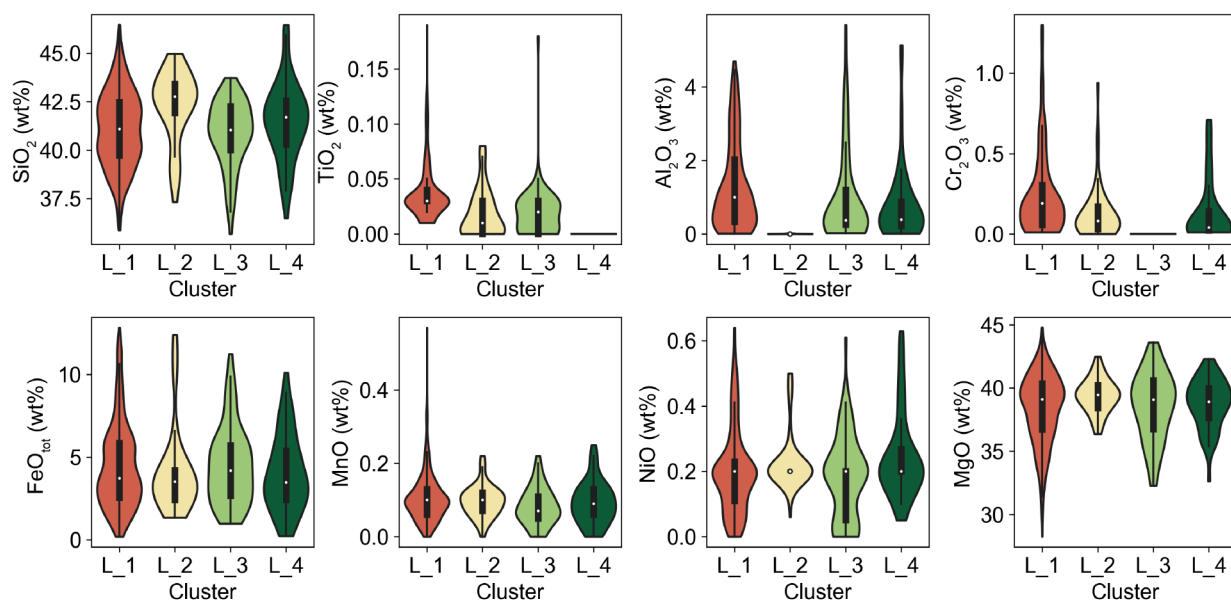


FIGURE S4. Violin plots of the density distributions of oxide concentrations in each L_Srp cluster.

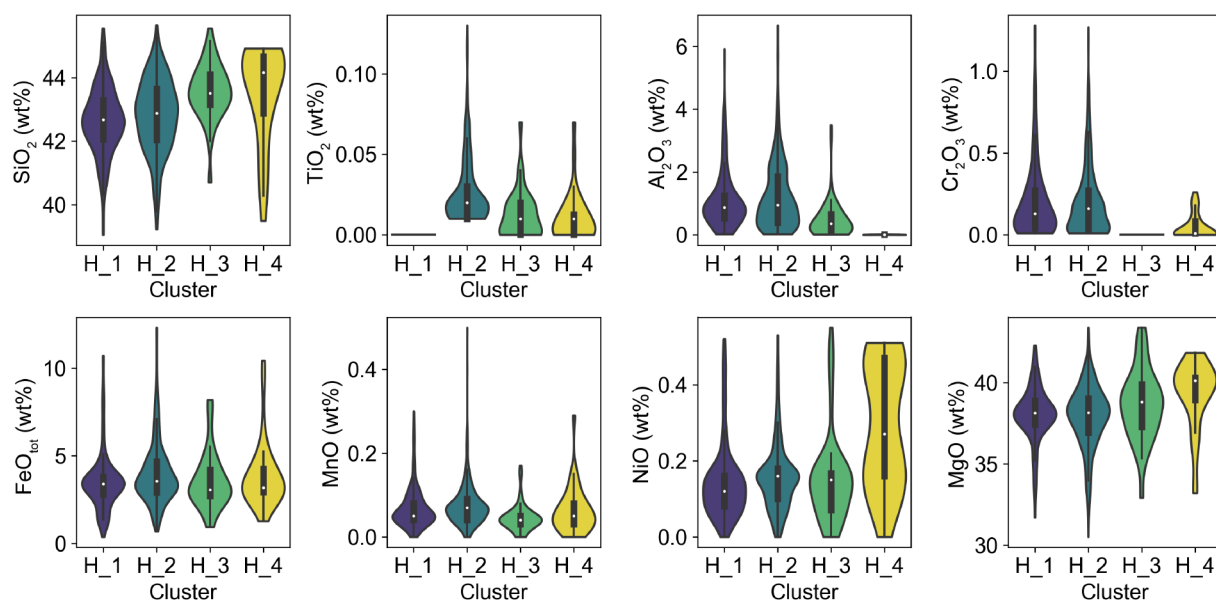


FIGURE S5. Violin plots of the density distributions of oxide concentrations in each H_Srp cluster.