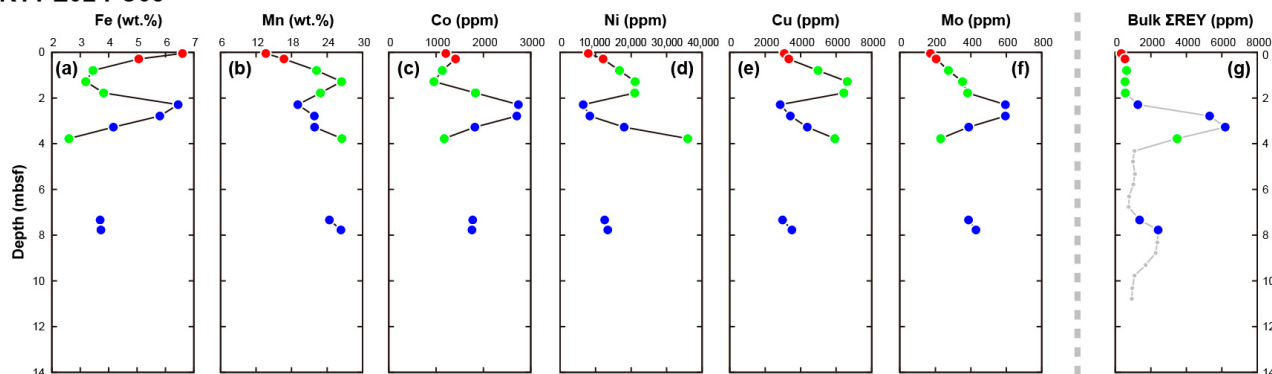


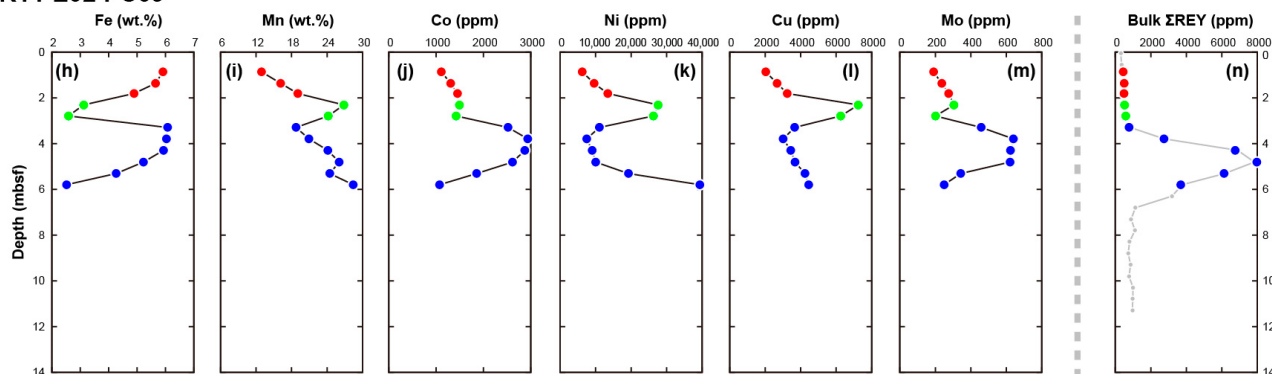
Supplementary Materials

Stratigraphic Variations of Fe–Mn Micronodules and Implications for the Formation of Extremely REY-rich Mud in the Western North Pacific Ocean

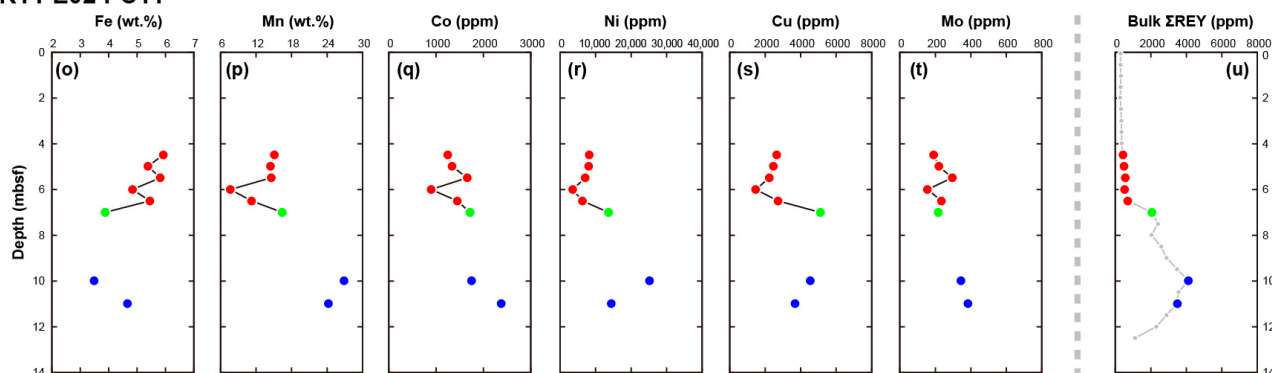
MR14-E02 PC05



MR14-E02 PC09



MR14-E02 PC11



● Cluster 1 ● Cluster 2 ● Cluster 3

Figure S1. Downcore variations of the key element contents colored by clusters ($K = 3$) (a–f, h–m and o–t). The Σ REY contents of the bulk sediments and the clustering are also shown for comparison (g, n, u).

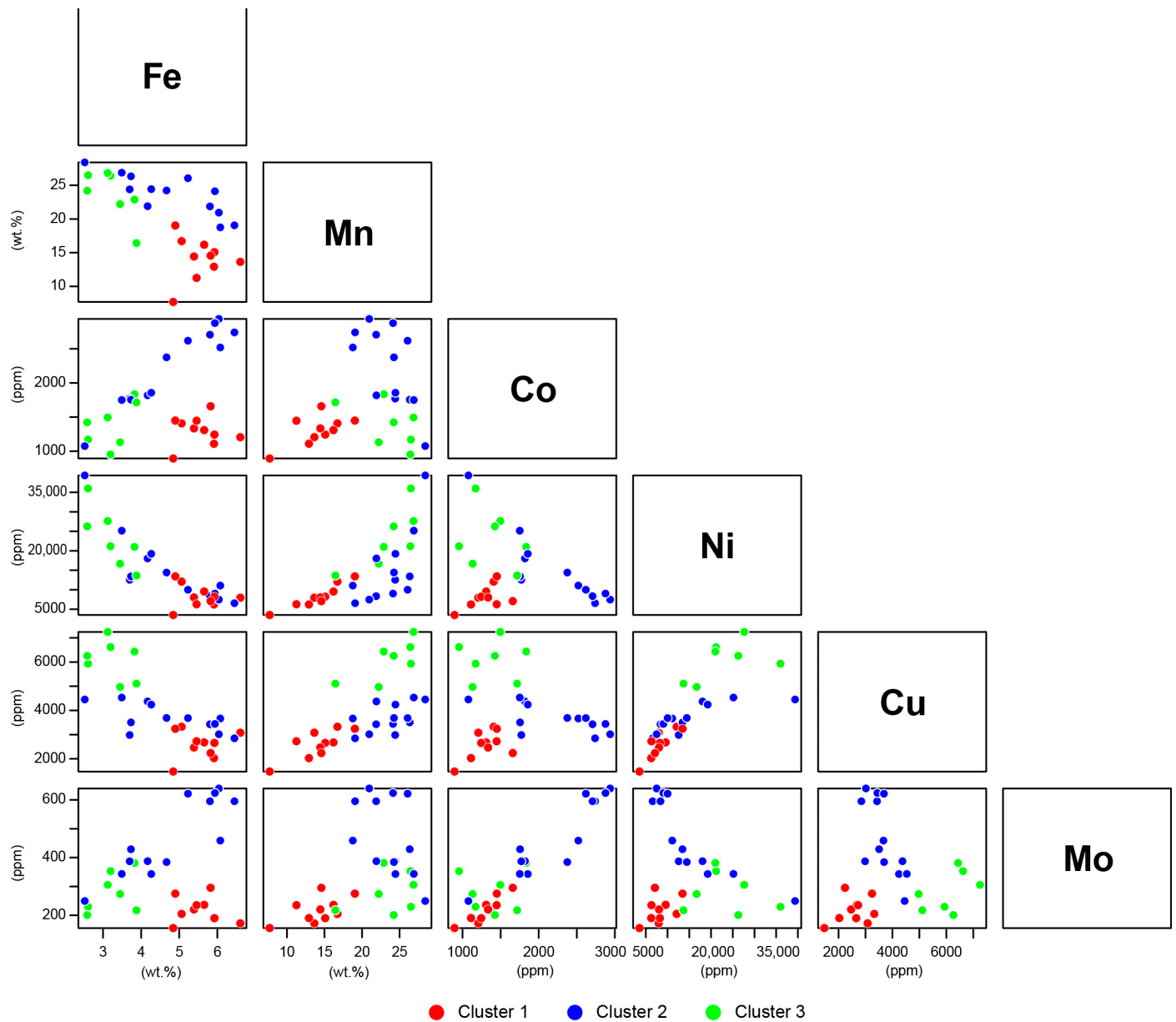
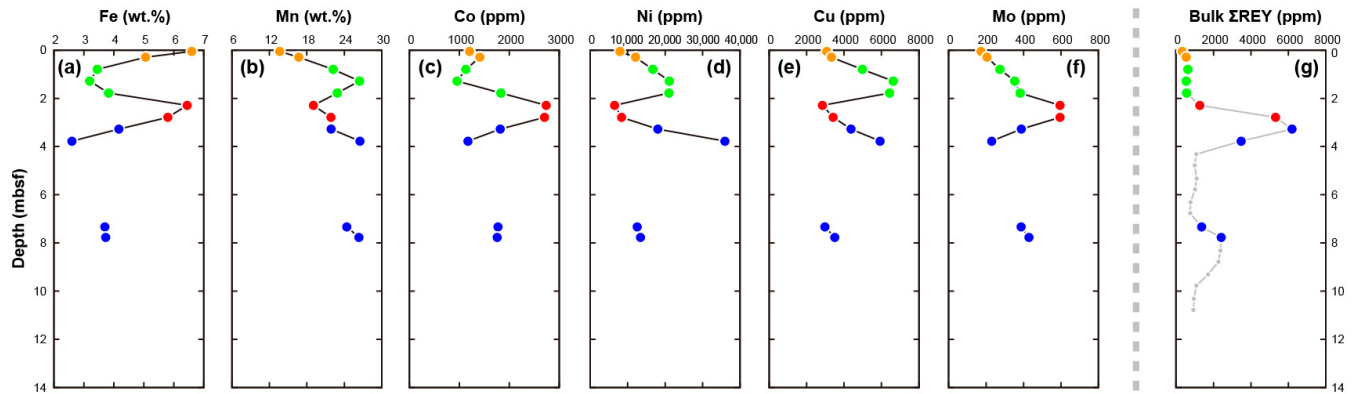
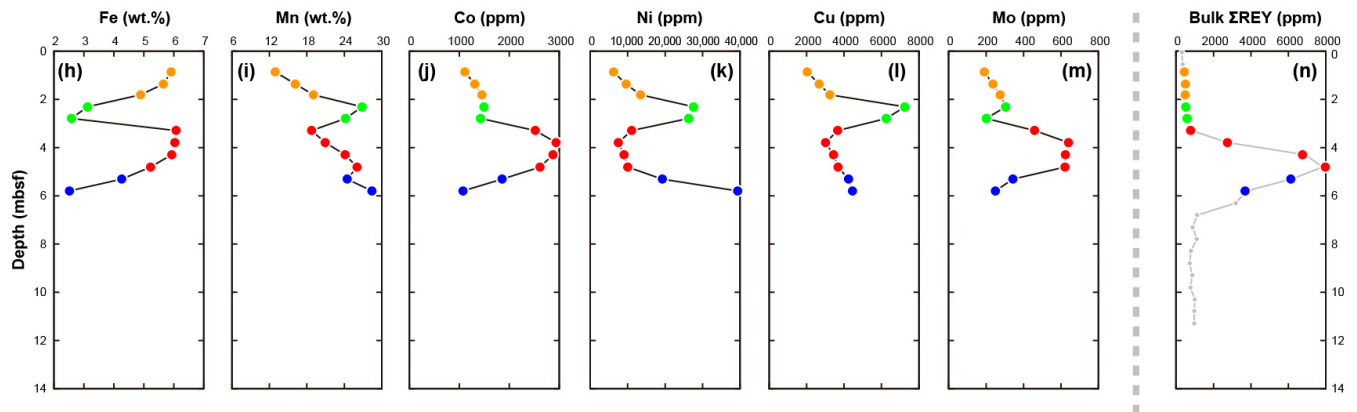
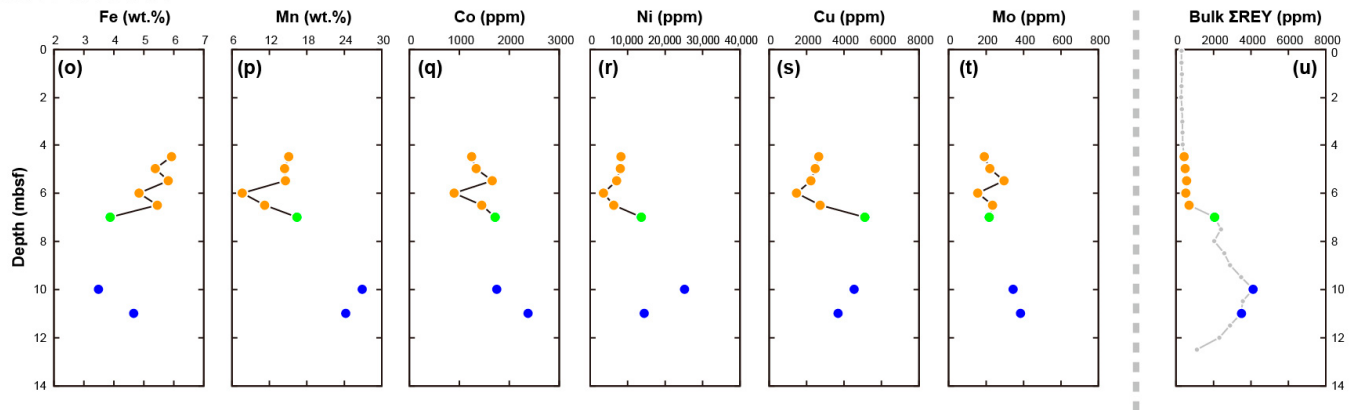


Figure S2. Scatter plot matrix of the Fe–Mn micronodule compositions colored by clusters ($K = 3$). The color-coding of the data points is the same as that in Figure S1.

MR14-E02 PC05**MR14-E02 PC09****MR14-E02 PC11**

● Cluster 1 ● Cluster 2 ● Cluster 3 ● Cluster 4

Figure S3. Downcore variations of the key element contents colored by clusters ($K = 4$) (a–f, h–m and o–t). The Σ REY contents of the bulk sediments and the clustering are also shown for comparison (g, n, u).

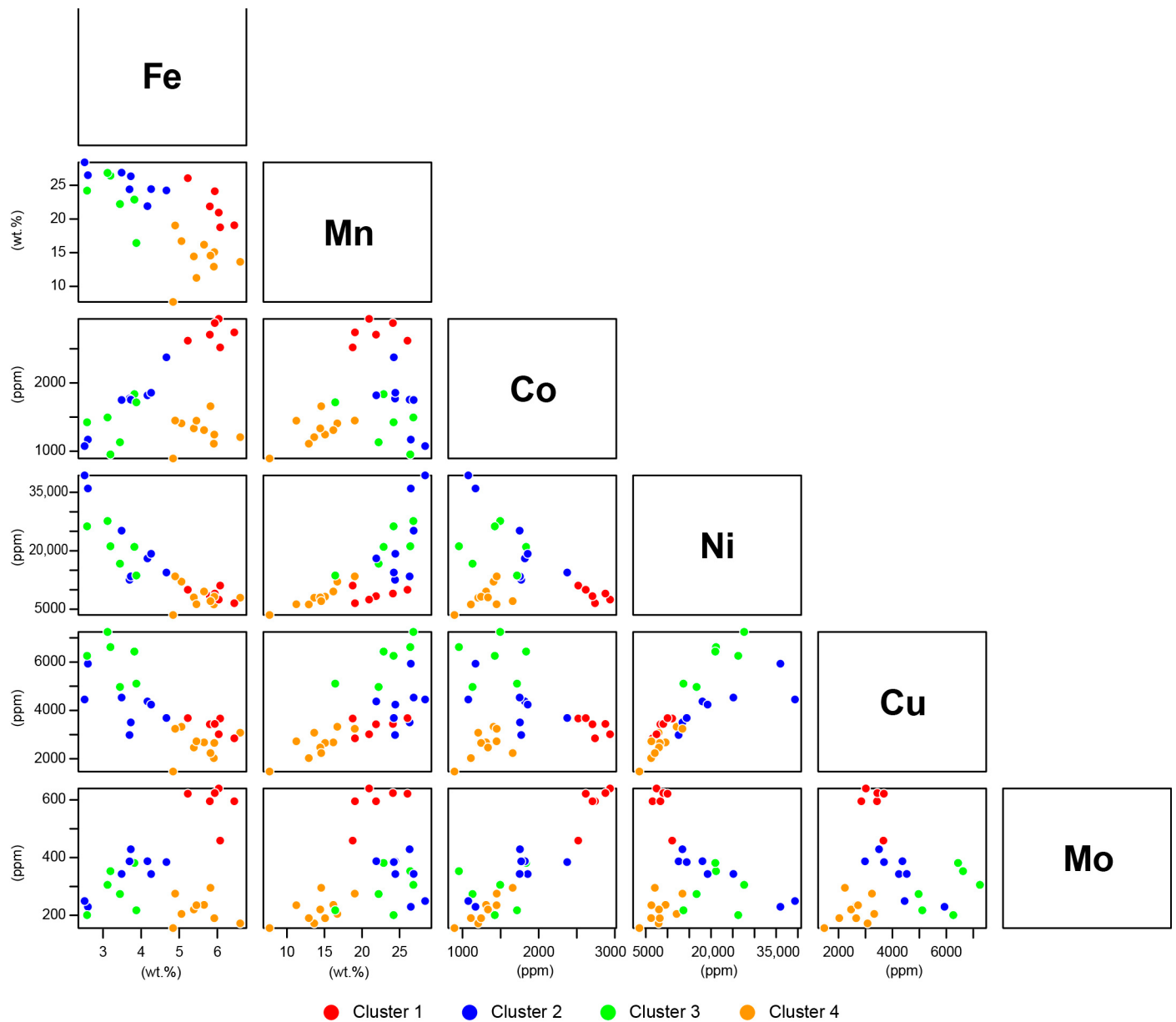
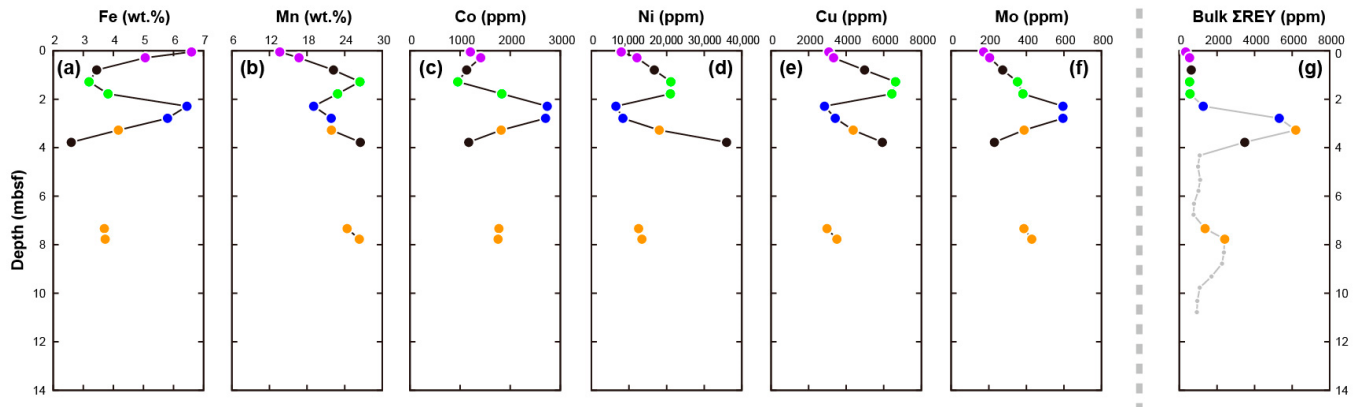
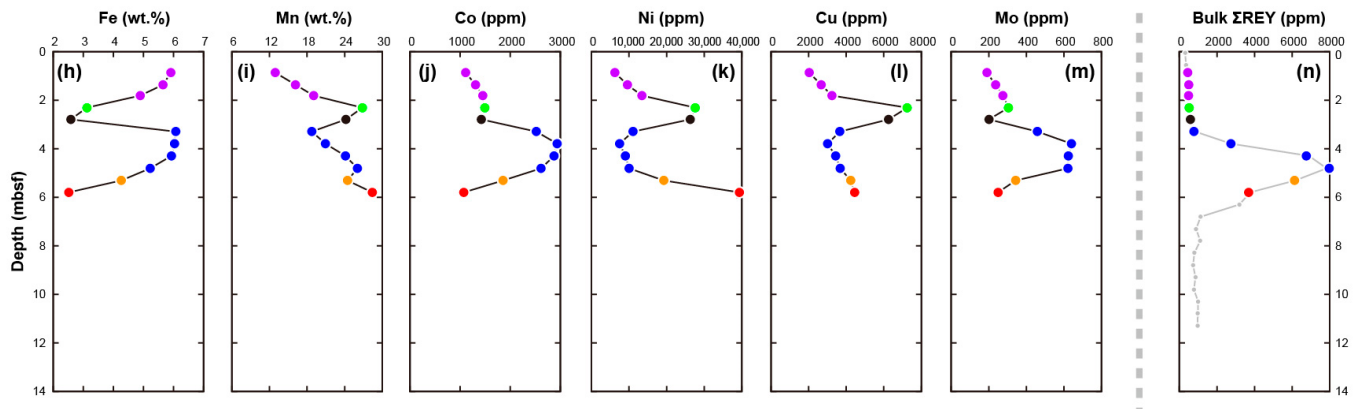
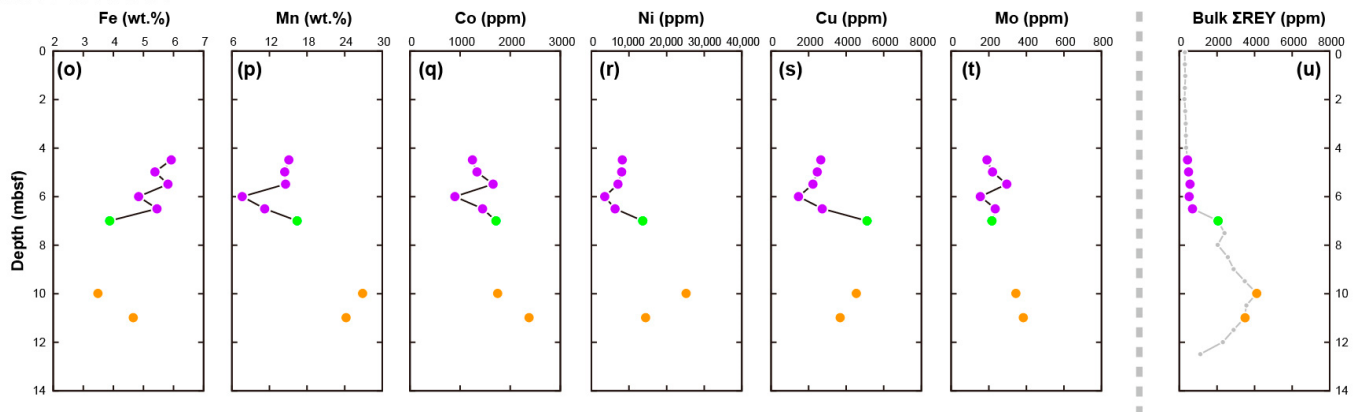


Figure S4. Scatter plot matrix of the Fe–Mn micronodule compositions colored by clusters ($K = 4$). The color-coding of the data points is the same as that in Figure S3.

MR14-E02 PC05**MR14-E02 PC09****MR14-E02 PC11**

● Cluster 1 ● Cluster 2 ● Cluster 3 ● Cluster 4 ● Cluster 5 ● Cluster 6

Figure S5. Downcore variations of the key element contents colored by clusters ($K = 6$) (a–f, h–m and o–t). The Σ REY contents of the bulk sediments and the clustering are also shown for comparison (g, n, u).

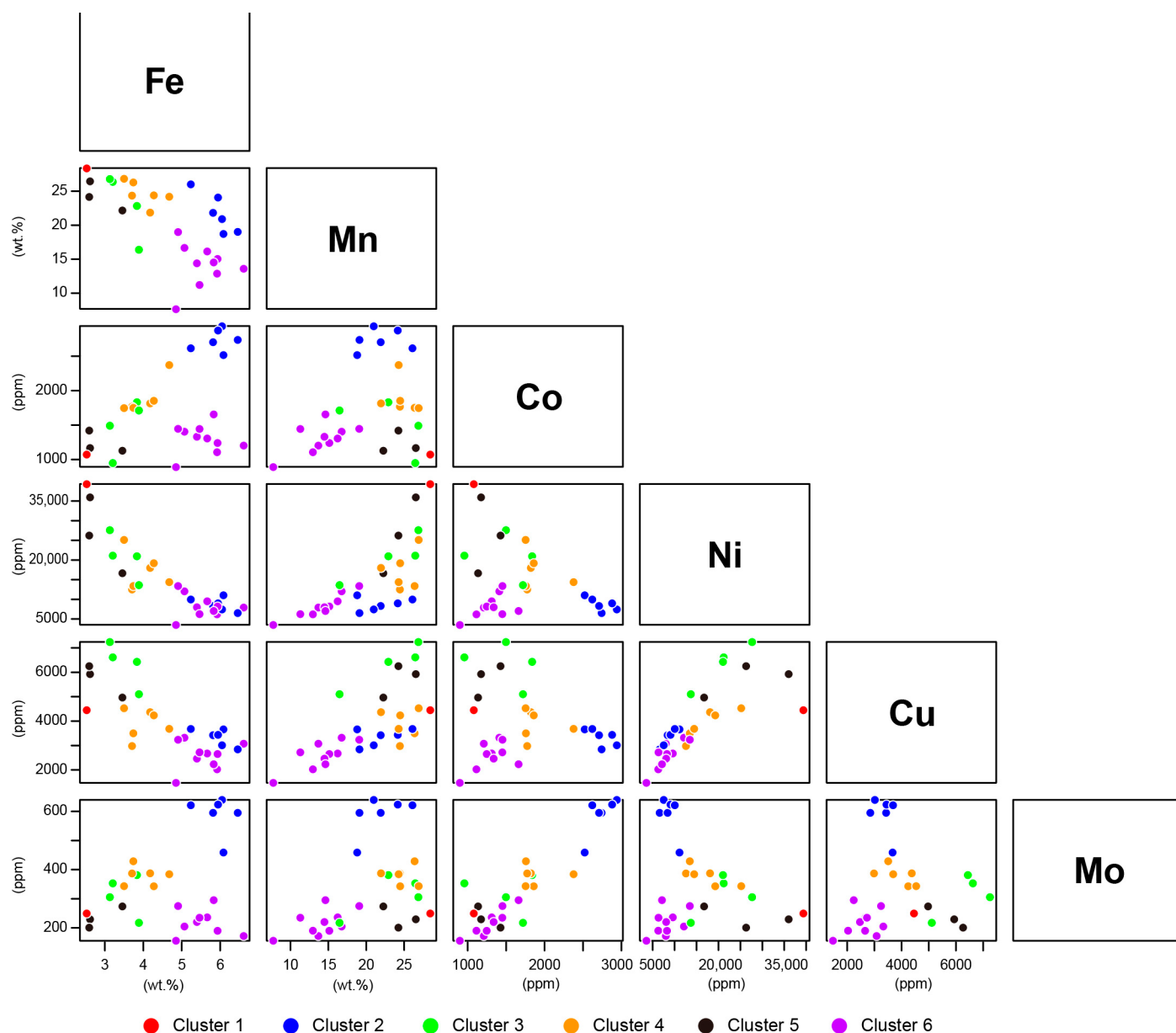


Figure S6. Scatter plot matrix of the Fe–Mn micronodule compositions colored by clusters ($K = 6$). The color-coding of the data points is the same as that in Figure S5.

Table S1. Result of Principal Component Analysis of bulk chemical composition data of the Fe–Mn micronodules.

Principal Component	Eigenvalue	Proportion of Variance	Cumulative Proportion
PC1	3.275	0.546	0.546
PC2	2.169	0.362	0.907
PC3	0.271	0.045	0.953
PC4	0.143	0.024	0.976
PC5	0.096	0.016	0.992
PC6	0.046	0.008	1.000