

APPENDICES

Appendix A - Comparison of results from the first two principal components

Below are presented results of correlation analysis based on the first two principal components for both original and residual data of calcitic samples. Rows in bold borders show results which provide better identification of correct provenance. Note that this assessment is based not only on the value of corresponding correlation coefficient but also on its relative prominence in comparison to values from other localities. For original data, analysis based on the first principal component was more effective in 4 out of 5 cases. For residual data, 3 out of 5 cases show better results from analysis based on the second principal component. Thus, we conclude that for our current dataset, most appropriate choice of principal components is - first for the analysis of original data and second for the analysis of residual data.

Tab. A1. Locality Nedvědice (288).

Original data	288	234	227	174	CS
PC1	0.894	0.028	0.616	0.189	0.341
PC2	0.973	0.103	0.447	0.062	0.316
Residual data					
PC1	0.959	0.022	0.679	0.881	0.690
PC2	0.973	0.203	0.722	0.331	0.057

Tab. A2. Locality Lipová - Na Pomezí (234).

Original data	288	234	227	174	CS
PC1	0.501	0.994	0.710	0.019	0.069
PC2	0.026	0.888	0.545	0.939	0.684
Residual data					
PC1	0.290	0.990	0.554	0.174	0.022
PC2	0.042	0.789	0.300	0.677	0.950

Tab. A3. Locality Bohdaneč (227).

Original data	288	234	227	174	CS
PC1	0.861	0.436	0.805	0.046	0.171
PC2	0.068	0.652	0.575	0.584	0.604
Residual data					
PC1	0.811	0.041	0.817	0.556	0.199
PC2	0.589	0.392	0.705	0.609	0.127

Tab. A4. Locality Raspenava (174).

Original data	288	234	227	174	CS
PC1	0.534	0.009	0.316	0.991	0.953
PC2	0.030	0.912	0.602	0.959	0.713
Residual data					
PC1	0.928	0.018	0.629	0.924	0.787
PC2	0.081	0.776	0.461	0.892	0.606

Tab. A5. Locality Čertovy Schody (CS).

Original data	288	234	227	174	CS
PC1	0.502	0.009	0.298	0.990	0.941
PC2	0.031	0.933	0.605	0.952	0.714
Residual data					
PC1	0.684	0.014	0.426	0.823	0.982
PC2	0.040	0.844	0.311	0.677	0.949

Appendix B - Complete results of meta-analysis for locality Bohdaneč (227)

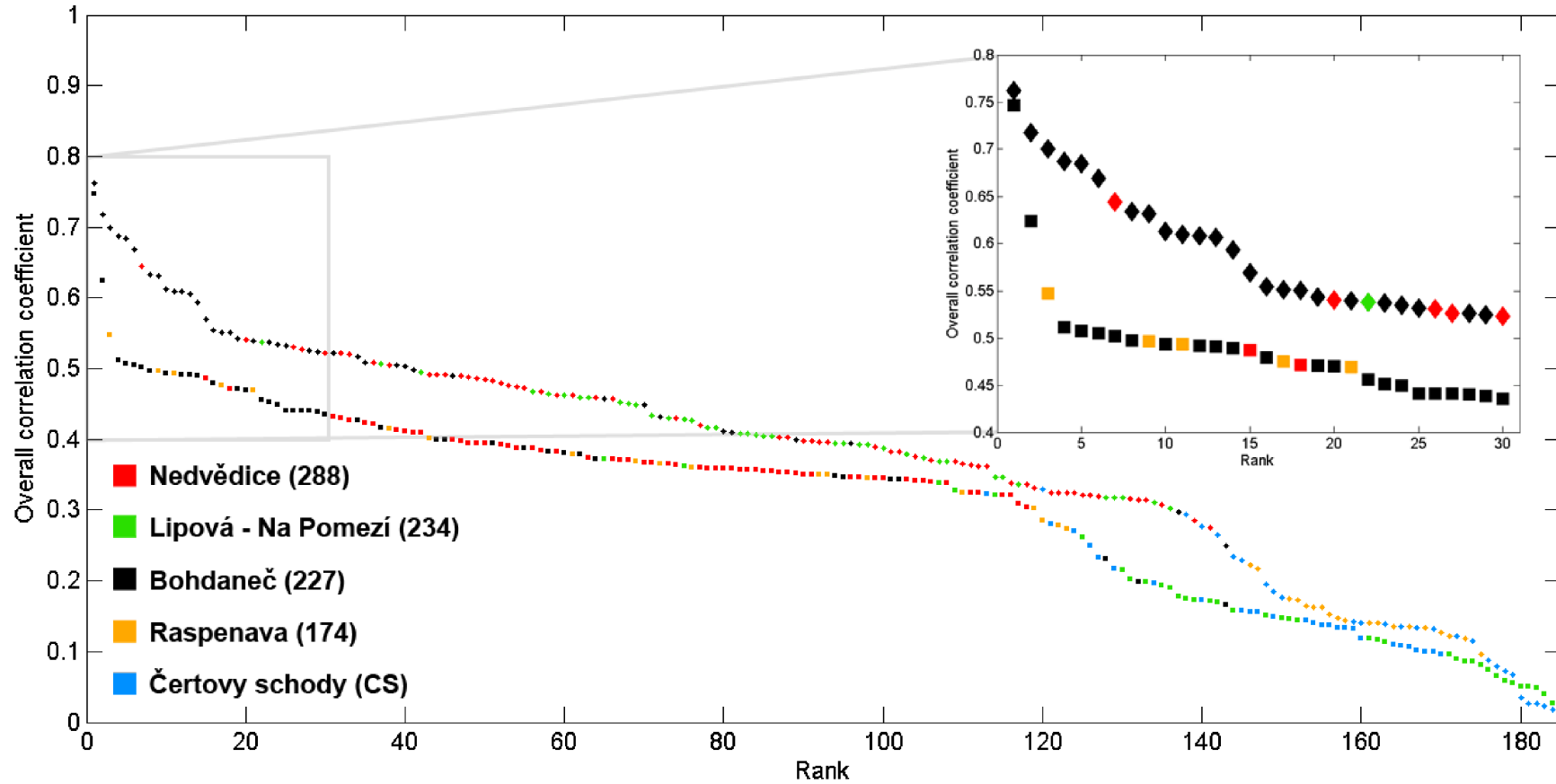


Fig. B1. Results of meta-analysis for sample from locality Bohdaneč (227) based on the original data (diamonds) and residual data (squares). Each point represents one spectrum from the database that was matched against the analysed spectrum of “unknown” sample from Bohdaneč (227). Values of overall correlation coefficients for all spectra are sorted in descending order. Prevalence of spectra from Bohdaneč (227) among the most highly ranked positions is a strong indication for classification of studied sample into this group.

Appendix C - Hierarchical clustering of marbles

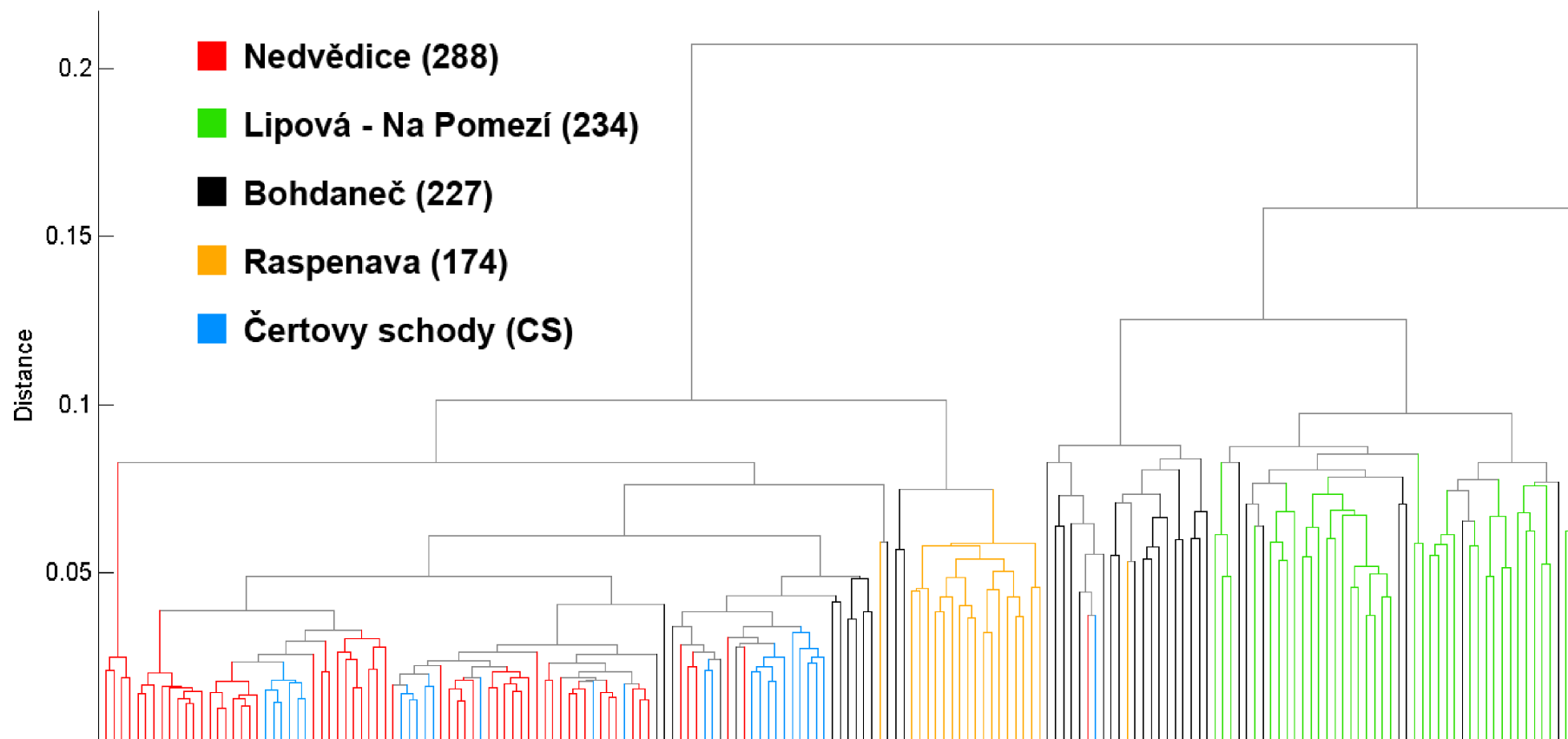


Fig. C1. Dendrogram showing results of agglomerative hierarchical clustering employing the combination of Minkowski distance ($p=3$) with average linkage calculated for original cathodoluminescence spectra of calcitic samples. 84.9 % of spectra are classified correctly.

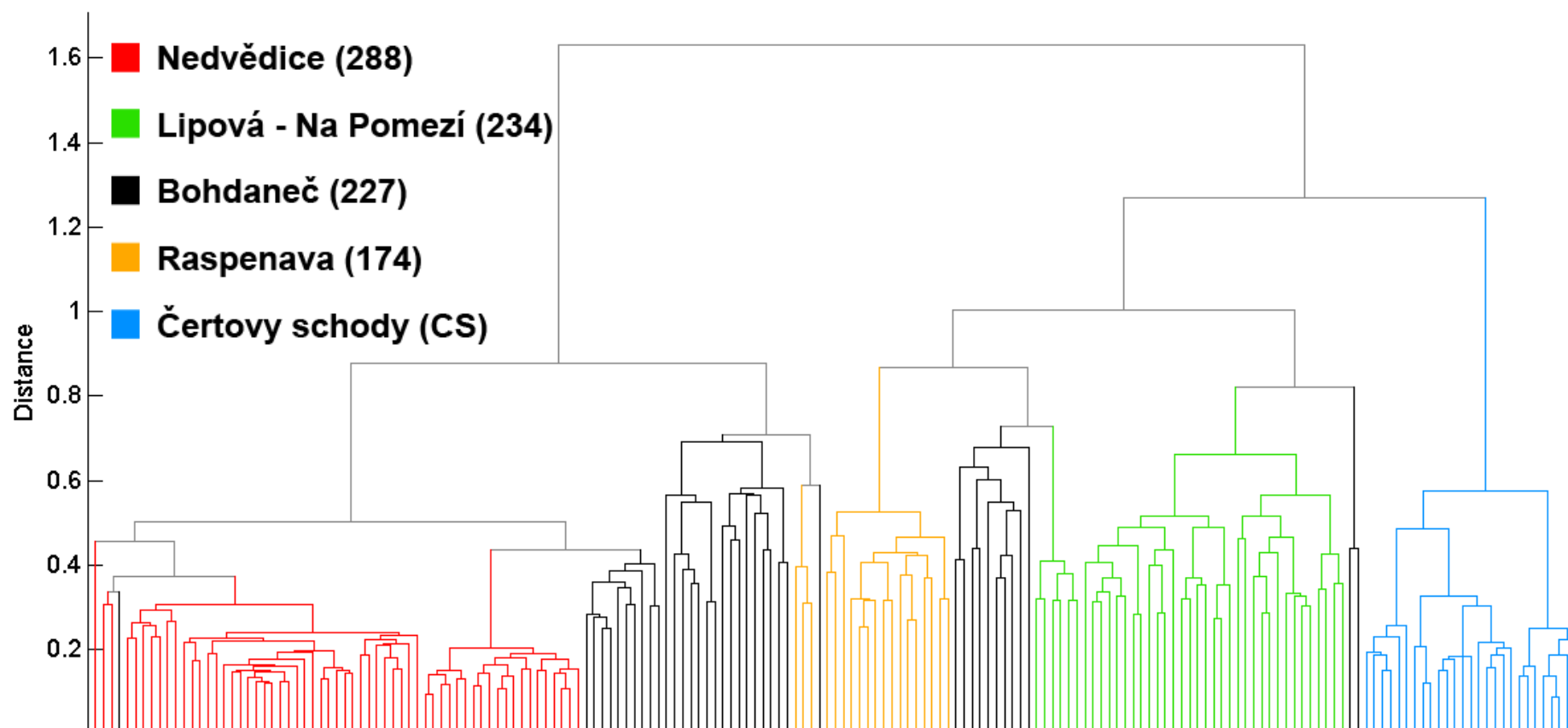


Fig. C2. Dendrogram showing results of agglomerative hierarchical clustering employing the combination of Minkowski distance ($p=3$) with average linkage calculated for overall results of analysis based on the residual spectra of calcitic samples. 82.7 % of spectra are classified correctly.