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When colour makes minerals unique: the case of the green dolomite from Malentrata (Pomarance, Tuscany, Italy)

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Figures


a


b

Figure S1a and S1b – Dolomite-magnesite samples from the Malentrata mine.

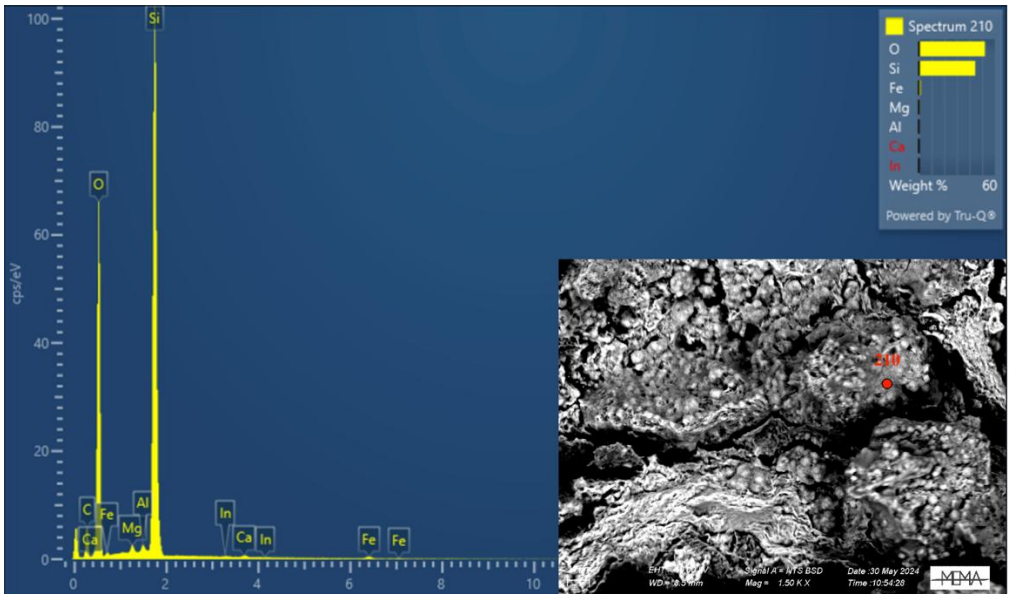

Figure S2 – EDS spectrum of part of the dolomite sample from Figure 3b. The chemical composition and habit correspond to those of an alteration product (e.g. a phyllosilicate).

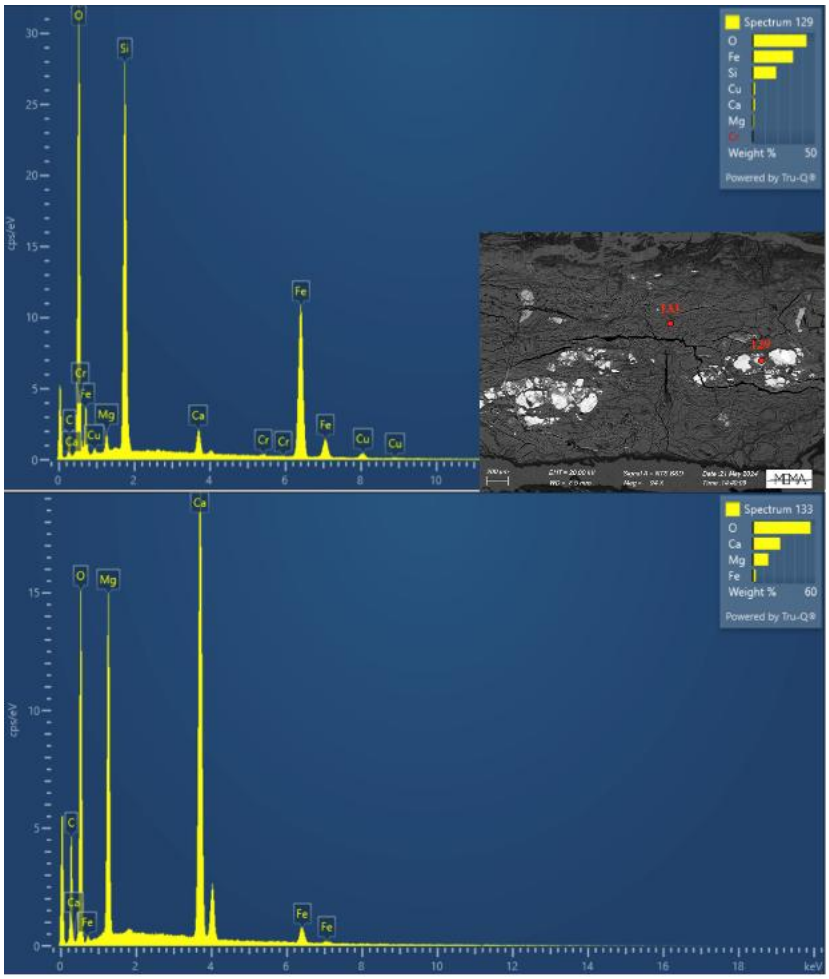

Figure S3 – EDS spectra of part of the dolomite sample from Figure 3c. The chemical composition is that of a magnesite (spectrum 133) and mineralised phases containing iron and silicon (spectrum 129).

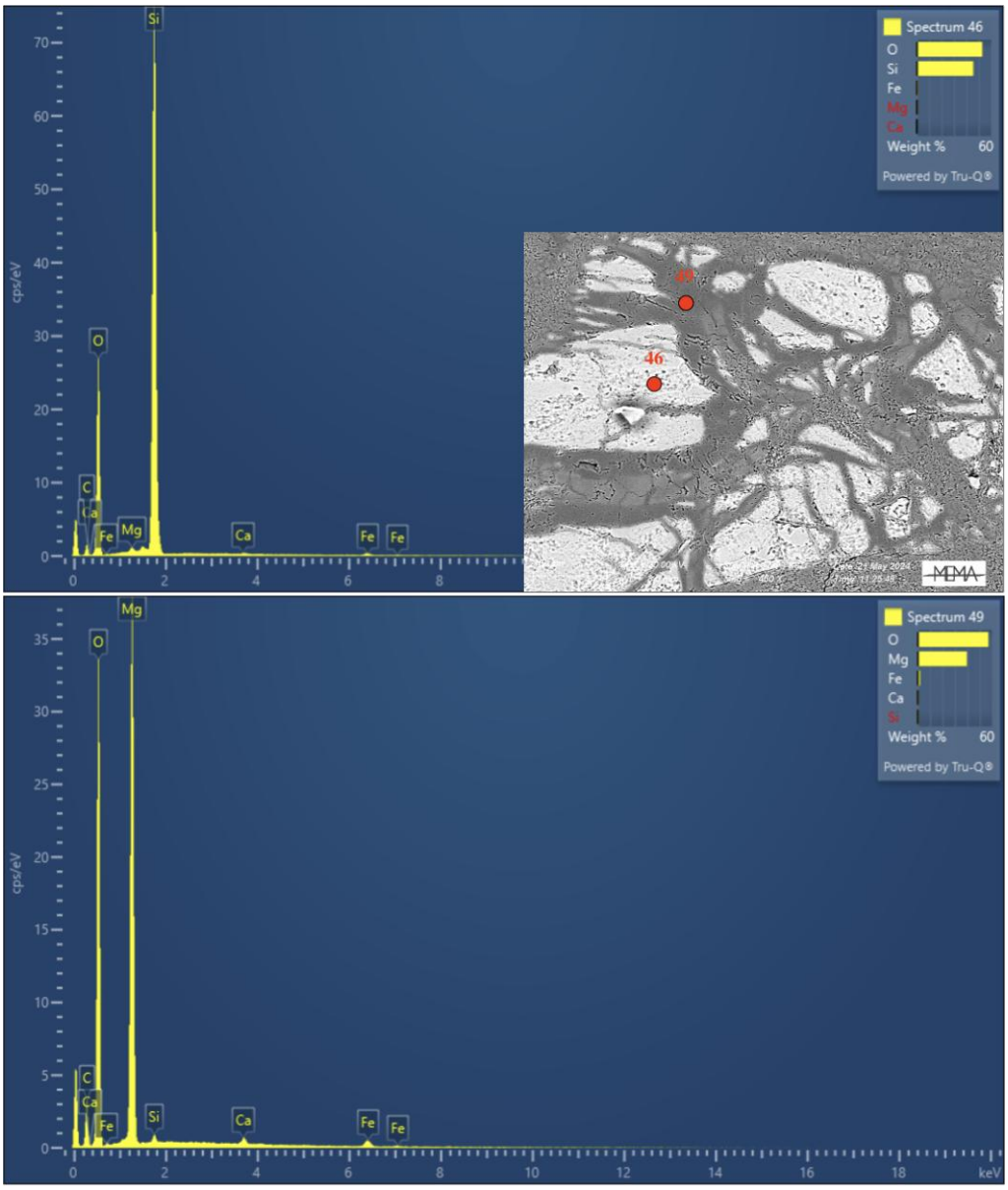

Figure S4 – EDS spectra of part of the dolomite sample from Figure 3d,where a fragment of chalcedony (spectrum 46) is surrounded by veins of magnesite (spectrum 49).

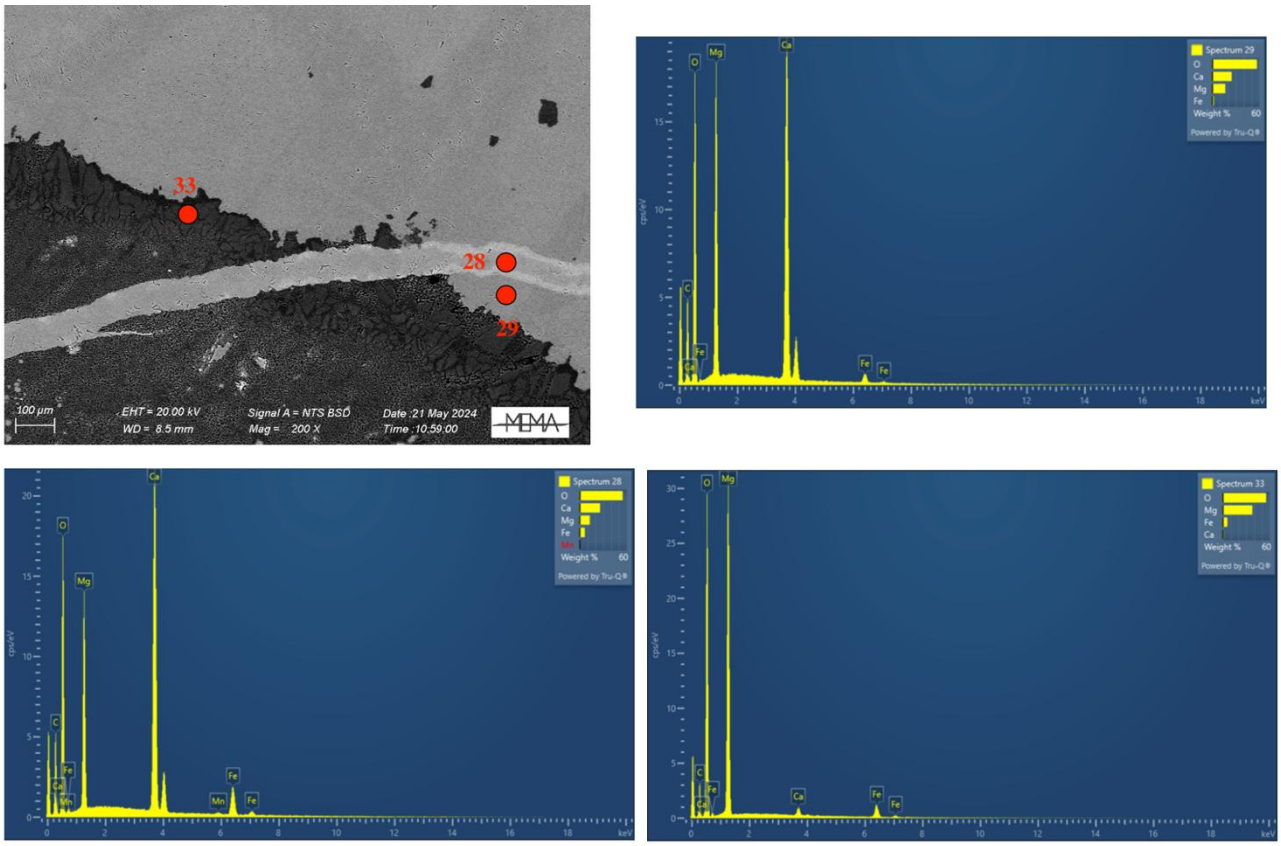

Figure S5 – EDS spectra of a port of the dolomite sample from Figure 3e. The late dolomite vein (spectrum 28) cuts through both early dolomite (spectrum 29) and magnesite (spectrum 33).

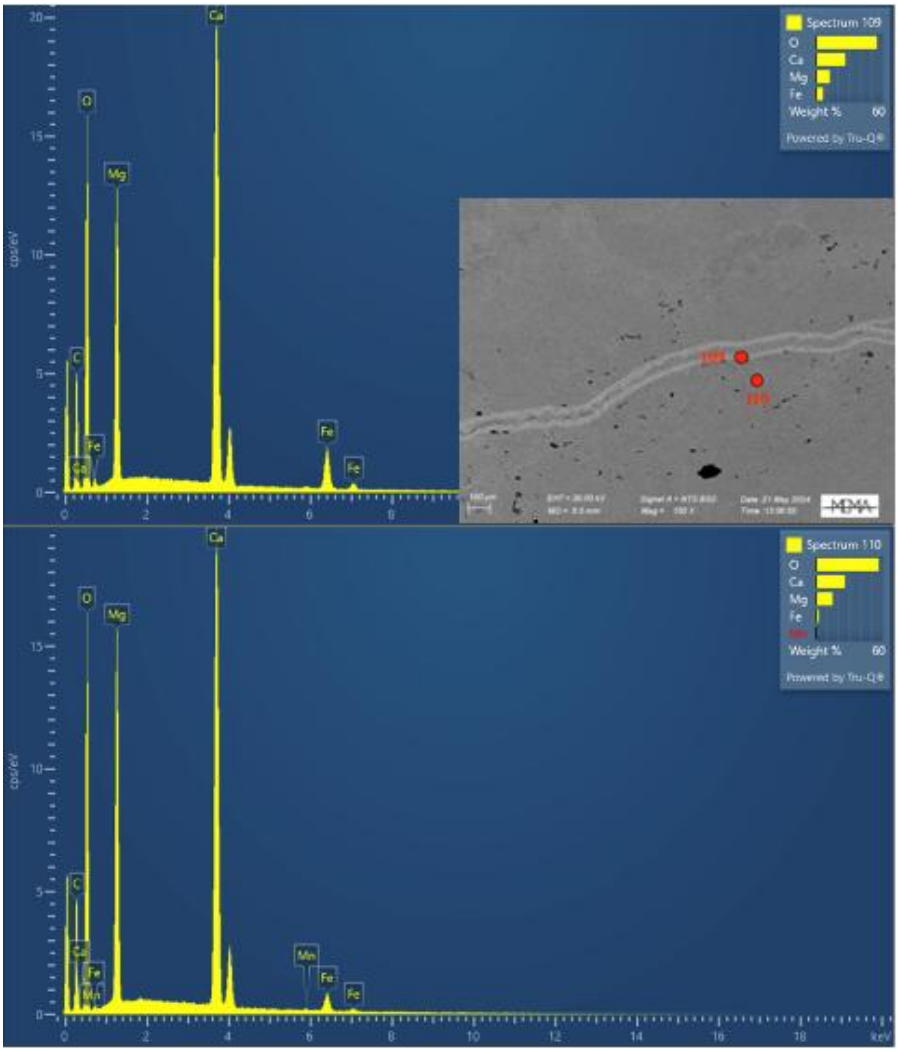

Figure S6 – EDS spectra of a part of the dolomite sample from Figure 3f. Spectra 109 and 110 are associated with a dolomitic composition. The edges of the dolomite vein show a higher concentration of iron.

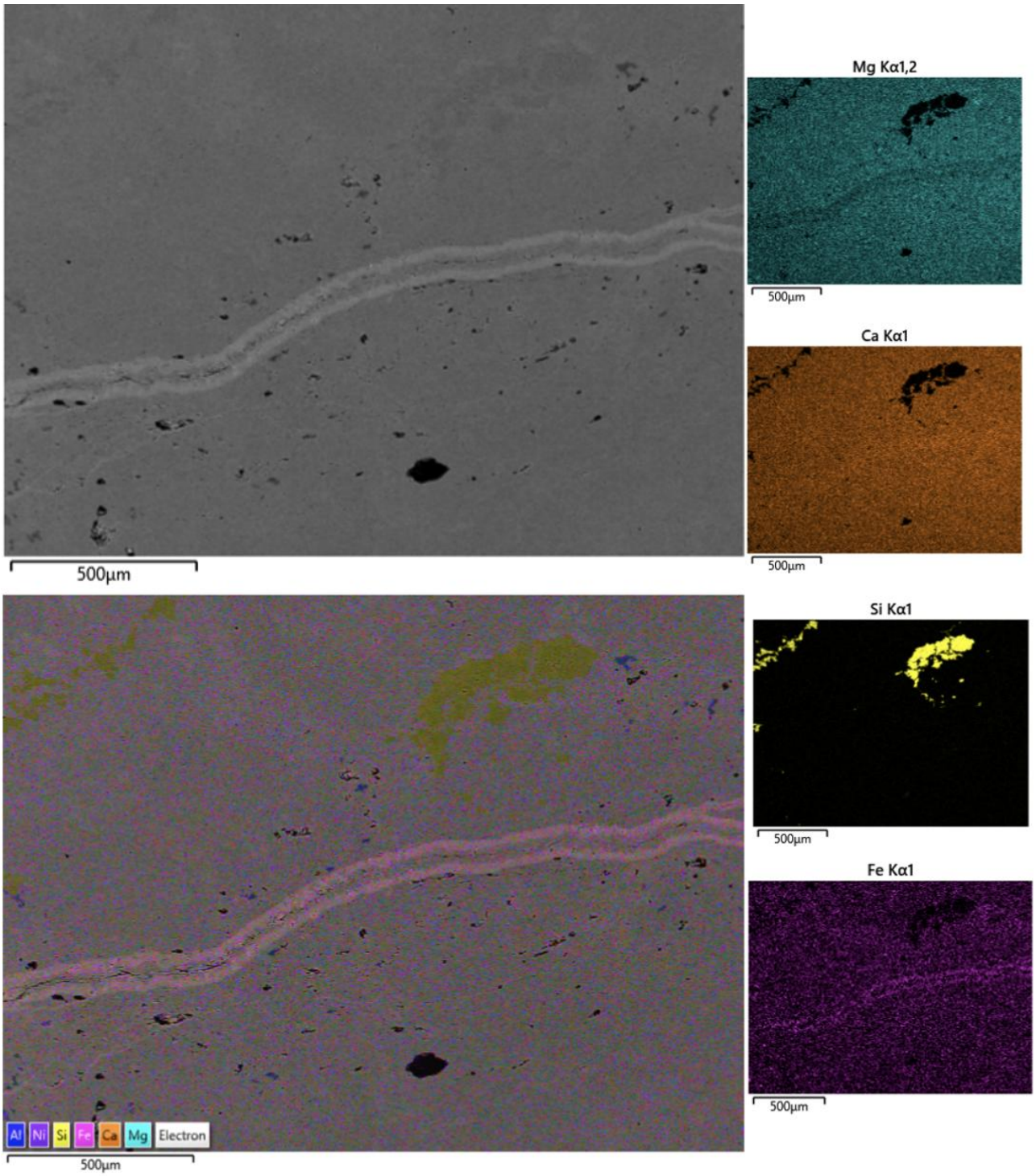

Figure S7 – Chemical mapping of part of the dolomite sample from Figure 3f.

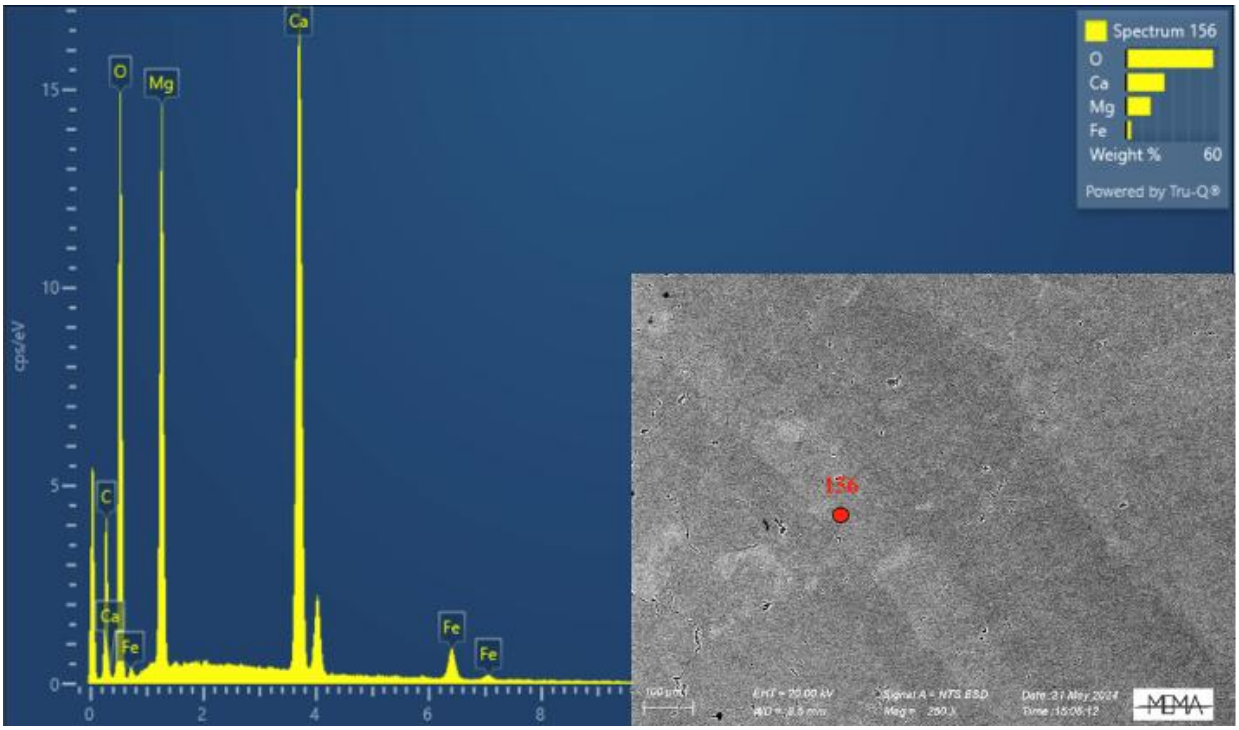

Figure S8 – EDS spectrum of part of the dolomite sample from Figure 3g. The micrograph and corresponding EDS spectrum show the zoning of the dolomite.

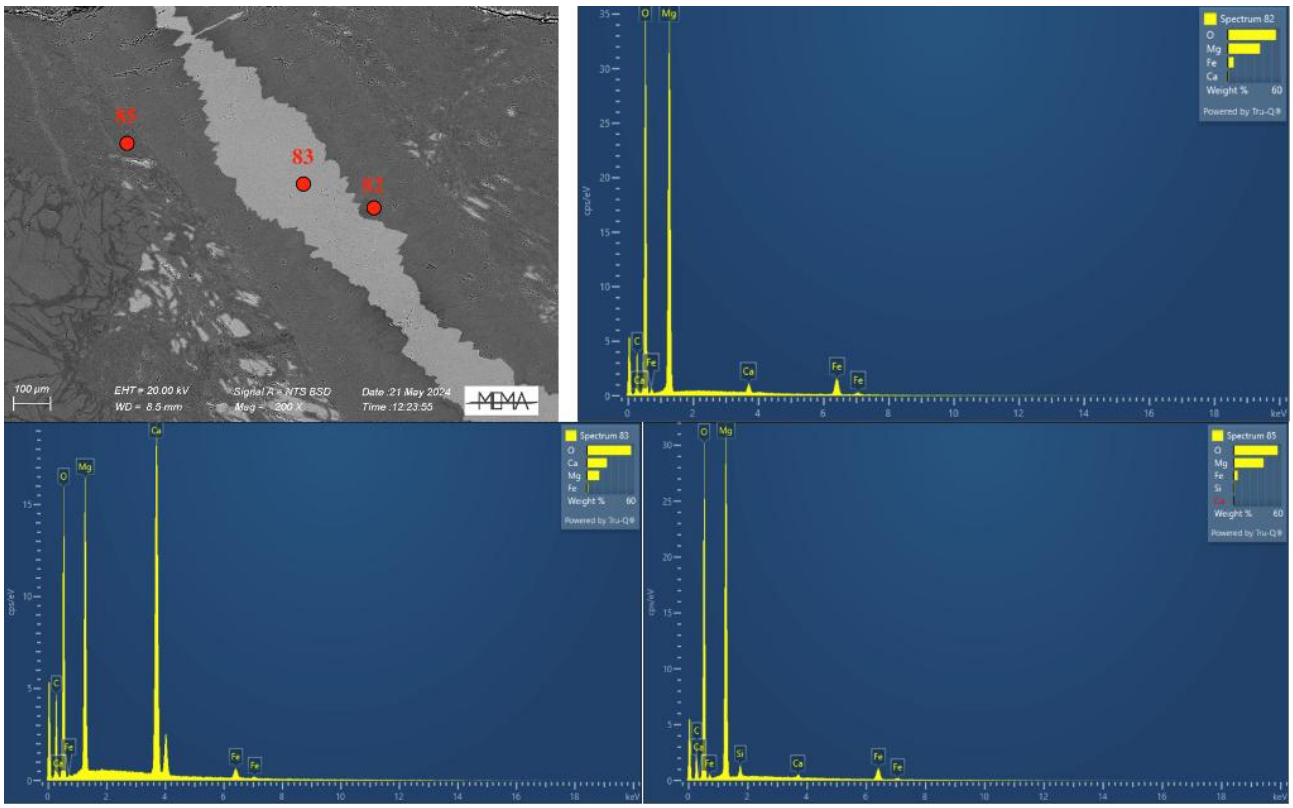

Figure S9 – EDS spectrum of part of the dolomite sample from Figure 3h. A dolomite vein (spectrum 83) intersects a darker area of magnesite composition (spectra 82 and 85).

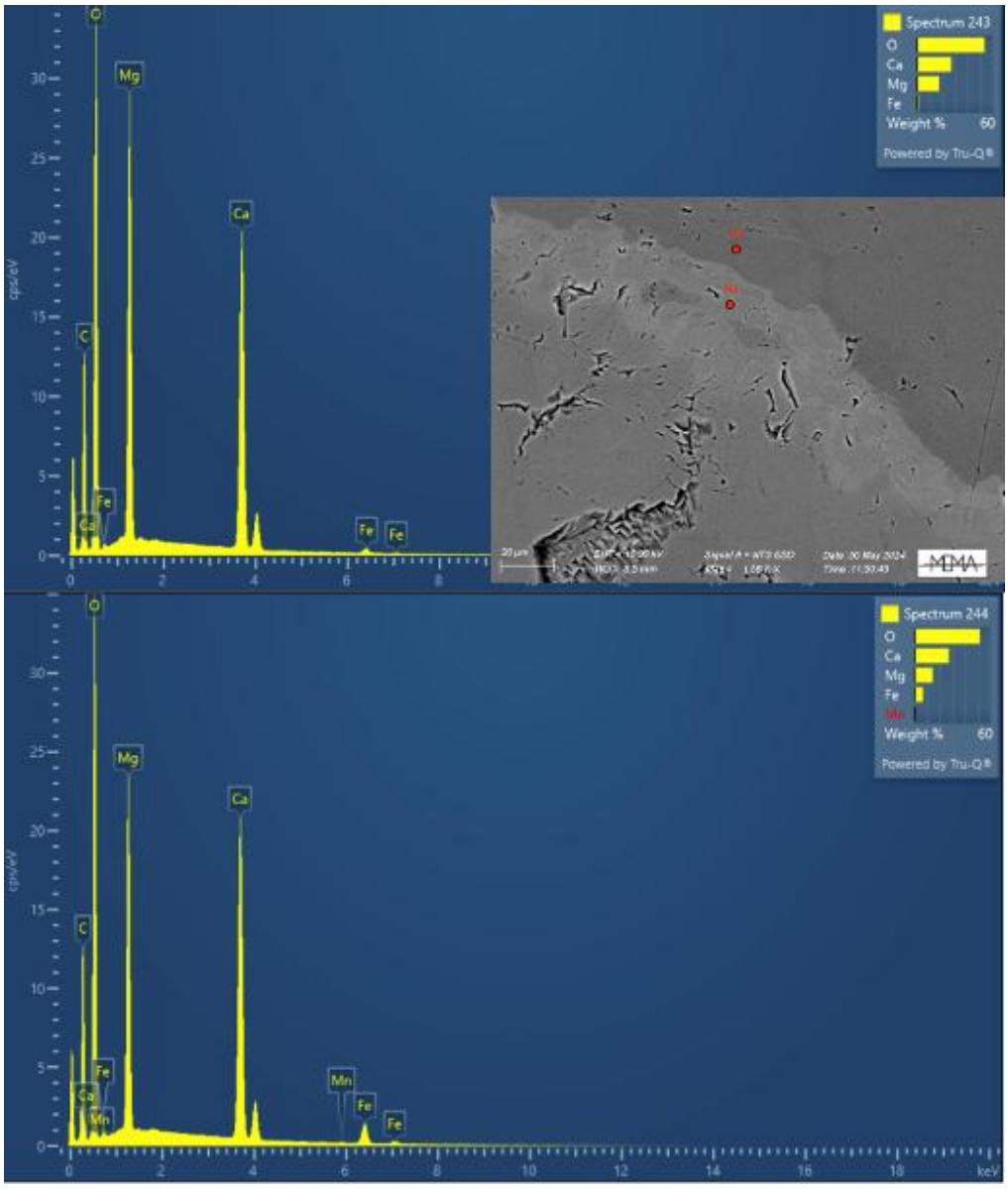

Figure S10 – EDS spectrum of part of the dolomite sample from Figure 3i. The BSE image represents two magnesite compositions with different iron concentrations. Specifically, spectrum 243 represents a magnesite with a lower iron concentration than spectrum 244.

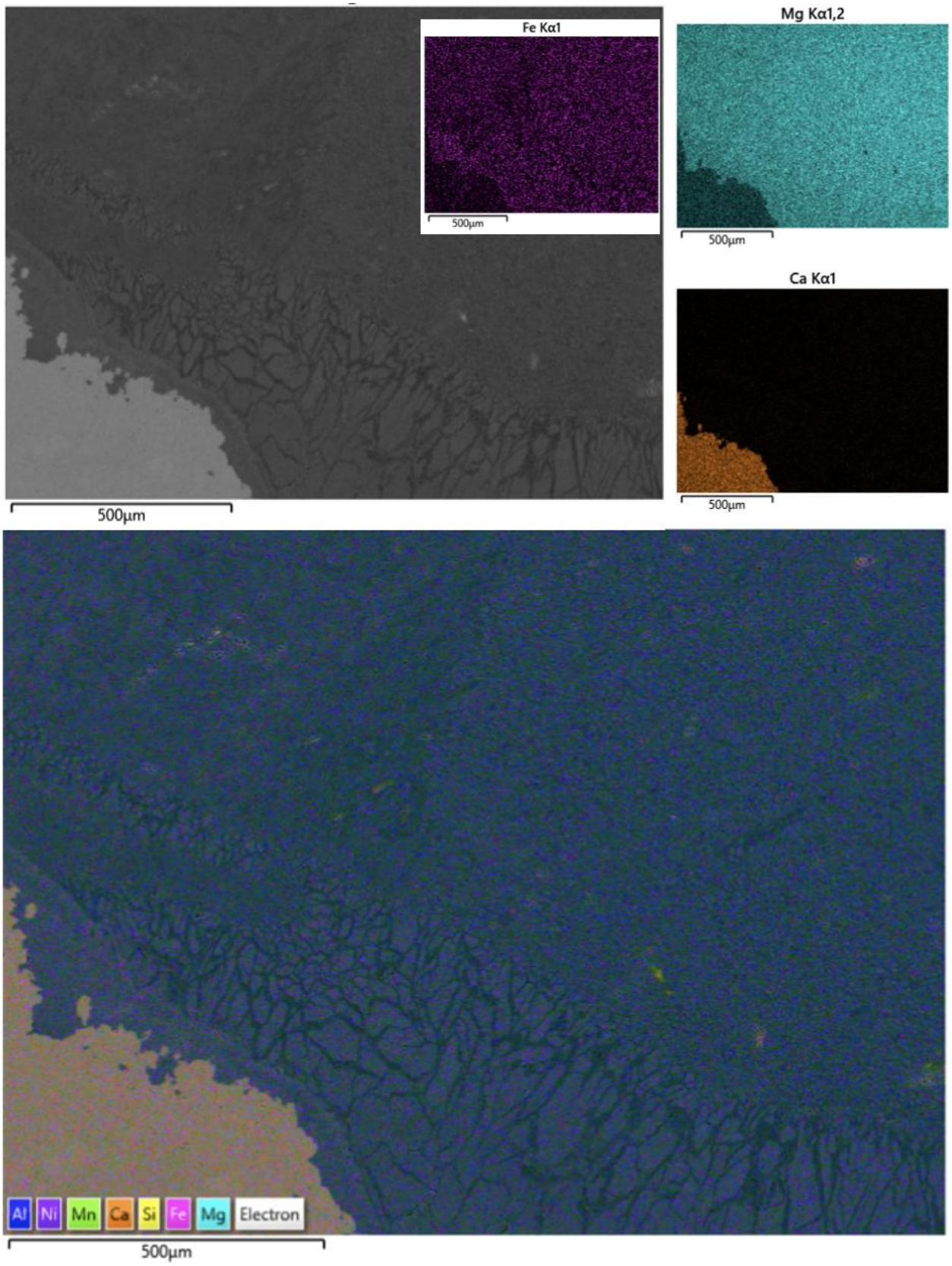

Figure S11 – Chemical mapping of a boundary region between dolomite and magnesite.

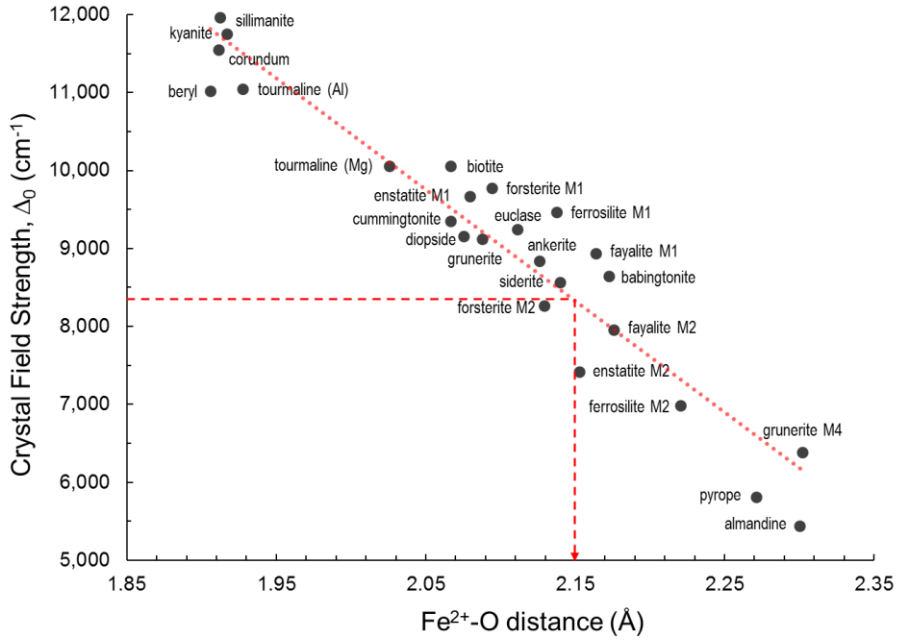

Figure S12- Fe^{2+}-O distance in silicates and carbonates as a function of Crystal Field Strength (data from (Burns, 1993; Lavina et al., 2010; Ross and Reeeder, 1992; Taran et al., 2017)). Dashed line: range of possible Fe^{2+}-O distance for dolomite from Malentrata Mine.

Tables

Table S1 – RT ^{57}Fe hyperfine parameters obtained for the sample analysed by Mössbauer analysis. δ is quoted relative to metallic iron at room temperature; the error on the relative areas is estimated to be 5%.

	δ (mm/s)	Δ (mm/s)	Γ_+ (mm/s)	A (%)	Fe(III)/Fe(II)	Attribution
Doublet 1	1.258±0.004	1.743±0.004	0.192±0.005	98	0.02	Fe(II) M
Doublet 2	0.35*	0.55*	0.2*	2*		Fe(III) M

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