

# Supplementary files:

Figure a: FTIR spectra in the NIR region of synthesized lizardite-nepouite series ( $\text{Si}_2\text{Mg}_{3-x}\text{Ni}_x\text{O}_5(\text{OH})_4$ ).

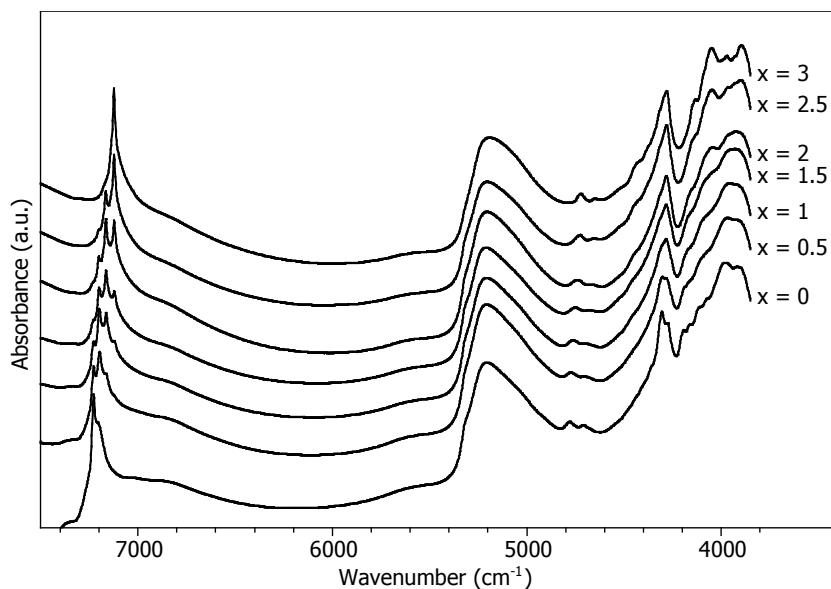


Table b: Calculated NIR combination band positions (4300 - 4800  $\text{cm}^{-1}$ ) for lizardite ( $x = 0$ ) from combination with three MIR features.  $\Delta$  corresponds to the difference between the calculated and the observed combination band positions.  $\dagger$  corresponds to small identified features (see Fig. 7a).

Band #	Observed NIR bands ( $\text{cm}^{-1}$ )	Combination with three MIR features ( $\text{cm}^{-1}$ )						Calculated NIR bands ( $\text{cm}^{-1}$ )	$\Delta$ ( $\text{cm}^{-1}$ )
14 $\dagger$	4396 $\dagger$	302	+	401	+	3695	=	4398	2
15	4409	302	+	458	+	3648	=	4408	1
17 $\dagger$	4487 $\dagger$	302	+	481	+	3695	=	4478	9
		380	+	458	+	3648	=	4486	1
		401	+	434	+	3648	=	4483	4
18 $\dagger$	4531 $\dagger$	380	+	504	+	3648	=	4532	1
		380	+	458	+	3695	=	4533	2
		401	+	481	+	3648	=	4530	1
		401	+	434	+	3695	=	4530	1
		434	+	458	+	3648	=	4540	9

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 11 Table c: Calculated NIR combination band positions (4300 - 4800  $\text{cm}^{-1}$ ) for nepouite ( $x = 3$ ) from  
 12 combination with three MIR features.  $\Delta$  corresponds to the difference between the calculated and  
 13 the observed combination band positions. † corresponds to small identified features (see Fig. 7b).

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Band #	Observed NIR bands ( $\text{cm}^{-1}$ )	Combination with three MIR features ( $\text{cm}^{-1}$ )						Calculated NIR bands ( $\text{cm}^{-1}$ )	$\Delta$ ( $\text{cm}^{-1}$ )
14	4348	318	+	427	+	3608	=	4353	5
		318	+	379	+	3649	=	4346	2
		357	+	379	+	3608	=	4344	4
15	4383	318	+	456	+	3608	=	4382	1
		357	+	427	+	3608	=	4392	9
		357	+	379	+	3649	=	4385	2
		379	+	404	+	3608	=	4391	8
16†	4426†	318	+	493	+	3608	=	4419	7
		318	+	456	+	3649	=	4423	3
		357	+	456	+	3608	=	4421	5
		357	+	427	+	3649	=	4433	7
		379	+	404	+	3649	=	4432	6
		404	+	404	+	3608	=	4416	10
17	4447	379	+	456	+	3608	=	4443	4
		379	+	427	+	3649	=	4455	8
		404	+	427	+	3608	=	4439	8
18†	4522†	379	+	493	+	3649	=	4521	1
		427	+	493	+	3608	=	4528	6
		456	+	456	+	3608	=	4520	2