Polytypism in semi-disordered lizardite and amesite by low-dose HAADF–STEM

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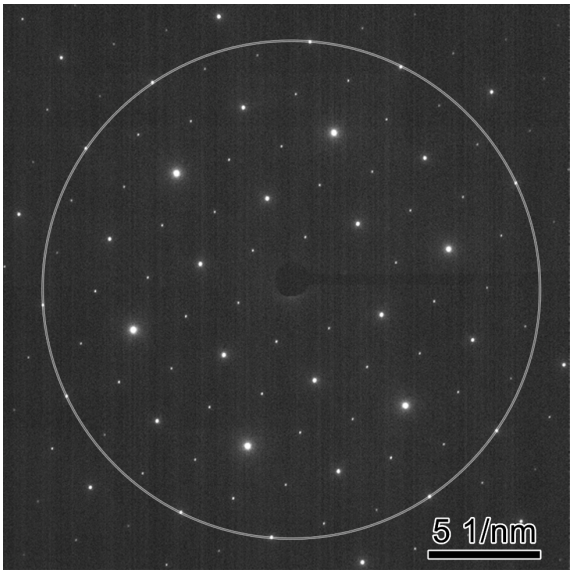

Figure S1. Selected area electron diffraction pattern of amesite along [001]. The diffraction spots outlined by the white circle were used for the diffraction intensity calculation versus the electron irradiation dose shown in **Fig. 2**. Those diffraction spots correspond to a real space distance of 1 Å.

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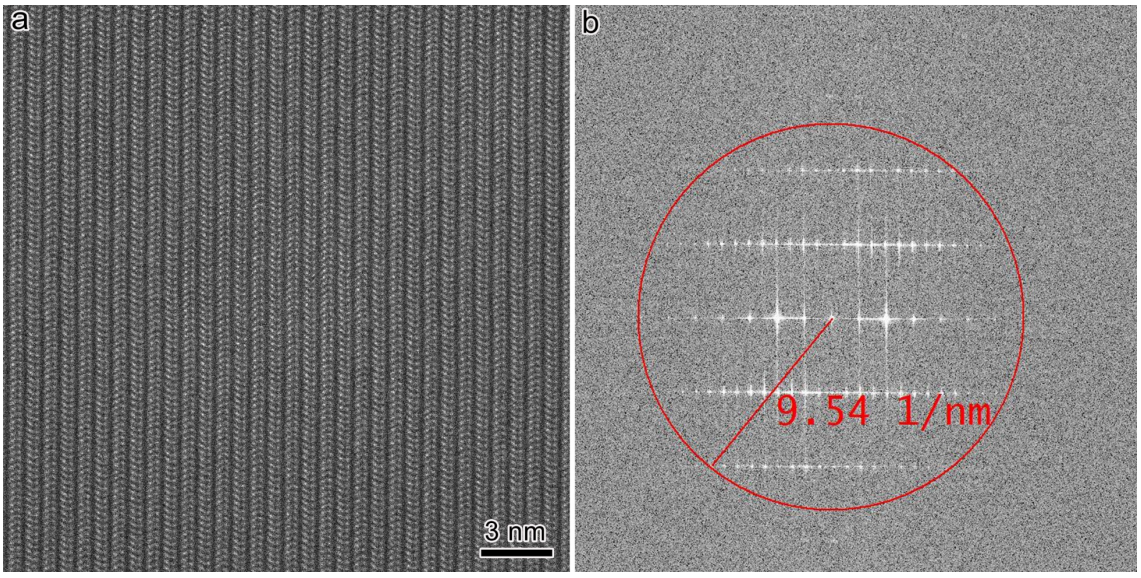

Figure S2. (a) HAADF–STEM image of amesite along [010]. (b) Fast Fourier transform of (a). The resolution is 1.05 Å, as shown by the circle.

Table S1. Ideal atomic position $6R_2$ polytype. *a*=*b*=5.3 Å, *c*=42.1 Å, α=β=90° and γ=120.0°.

Atom	x	y	z		Atom	x	y	z
O	0.5000	0.0000	0.0000		O	-0.6667	1.1667	0.5000
O	0.0000	0.5000	0.0000		O	-0.1667	0.6667	0.5000
O	0.5000	0.5000	0.0000		O	-0.1667	1.1667	0.5000
Si	0.6667	0.3333	0.0140		Si	0.0000	1.0000	0.5140
Si	0.3333	0.6667	0.0140		Si	-0.3333	1.3333	0.5140
O	0.6667	0.3333	0.0530		O	0.0000	1.0000	0.5530
O	0.3333	0.6667	0.0530		O	-0.3333	1.3333	0.5530
O	0.0000	0.0000	0.0530		O	-0.6667	0.6667	0.5530
Mg	0.6667	0.0000	0.0780		Mg	-0.6667	1.0000	0.5780
Mg	0.0000	0.6667	0.0780		Mg	-0.3333	0.6667	0.5780
Mg	0.3333	0.3333	0.0780		Mg	0.0000	1.3333	0.5780
O	0.3333	0.0000	0.1010		O	-0.6667	1.3333	0.6010
O	0.0000	0.3333	0.1010		O	0.0000	0.6667	0.6010
O	0.6667	0.6667	0.1010		O	-0.3333	1.0000	0.6010
O	0.0000	0.5000	0.1667		O	0.1667	1.3333	0.6667
O	0.5000	1.0000	0.1667		O	-0.3333	0.8333	0.6667
O	0.5000	0.5000	0.1667		O	0.1667	0.8333	0.6667
Si	-0.3333	0.3333	0.1807		Si	-0.6667	0.6667	0.6807
Si	0.3333	0.6667	0.1807		Si	0.0000	1.0000	0.6807
O	-0.3333	0.3333	0.2197		O	-0.6667	0.6667	0.7197
O	0.3333	0.6667	0.2197		O	0.0000	1.0000	0.7197
O	0.0000	1.0000	0.2197		O	-0.3333	1.3333	0.7197
Mg	0.0000	0.3333	0.2447		Mg	-0.6667	1.3333	0.7447
Mg	0.3333	1.0000	0.2447		Mg	-0.3333	1.0000	0.7447
Mg	-0.3333	0.6667	0.2447		Mg	0.0000	0.6667	0.7447
O	0.0000	0.6667	0.2677		O	0.0000	1.3333	0.7677
O	-0.3333	1.0000	0.2677		O	-0.3333	0.6667	0.7677
O	0.3333	0.3333	0.2677		O	-0.6667	1.0000	0.7677
O	-0.1667	0.6667	0.3333		O	-0.3333	-0.1667	0.8333
O	0.3333	1.1667	0.3333		O	-0.8333	-0.6667	0.8333
O	-0.1667	1.1667	0.3333		O	-0.8333	-0.1667	0.8333
Si	0.0000	1.0000	0.3473		Si	-0.6667	-0.3333	0.8473
Si	-0.3333	0.3333	0.3473		Si	-1.0000	-1.0000	0.8473
O	0.0000	1.0000	0.3863		O	-0.6667	-0.3333	0.8863
O	-0.3333	0.3333	0.3863		O	-1.0000	-1.0000	0.8863
O	0.3333	0.6667	0.3863		O	-0.3333	-0.6667	0.8863
Mg	0.0000	0.6667	0.4113		Mg	-0.3333	-0.3333	0.9113
Mg	0.3333	0.3333	0.4113		Mg	-1.0000	-0.6667	0.9113
Mg	-0.3333	1.0000	0.4113		Mg	-0.6667	-1.0000	0.9113
O	-0.3333	0.6667	0.4343		O	-0.3333	-1.0000	0.9343
O	0.3333	1.0000	0.4343		O	-0.6667	-0.6667	0.9343
O	-0.3333	0.6667	0.4343		O	-1.0000	-0.3333	0.9343