

EOSC220 Mineralogy: Mineral Evolution Activity Mineral List						
Era	Stage	Name	Age	Cumulative	Mineral#	Mineral
Prenebular "Ur-Minerals"			>4.6 Ga	12		
Planetary Accretion	1	Primary chondrite minerals	>4.56 Ga	60	1	graphite
					2	rutile
					3	corundum
					4	forsterite
					5	ilmenite
	2	Achondrite + planetesimal alteration	>4.56 to 4.55 Ga	250	6	Fe-Ni metal
	7				albite	
	8				quartz	
	9				nepheline	
	10				enstatite	
					11	pyrrhotite
Crust and Mantle Reworking	3	Igneous rock evolution	4.55 to 4.0 Ga	350 to 500	12	K-feldspar
					13	labradorite
					14	augite
					15	hornblende
					16	biotite
					17	zircon
	4	Granite and pegmatite formation	4.0 to 3.5 Ga	1000	18	muscovite
					19	tourmaline
					20	spodumene
					21	beryl
					22	lepidolite
					23	topaz
	5	Plate tectonics	>3.0 Ga	1500	24	chalcopyrite
					25	sphalerite
					26	garnet
					27	kyanite
					28	staurolite
Biologically Mediated Mineralogy	6	Anoxic biological world	3.9 to 2.5 Ga	1500	29	pyrite
					30	magnetite
					31	siderite
					32	barite
					33	gypsum
					34	halite
					35	tremolite
		36	wollastonite			
	7	Great oxidation event	2.5 to 1.9 Ga	>4000	37	hematite
					38	rhodocrosite
					39	rhodonite
					40	malachite
					41	azurite
					42	bornite
					43	covellite
		44	arsenopyrite			
	8	Intermediate ocean	1.9 to 1.0 Ga	>4000		water
	9	Snowball Earth events	1.0 to 0.542 Ga	>4000		ice
	10	Biomineralization (Phanerozoic)	0.542 to present	4400+	45	calcite (coral)
					46	dolomite
					47	aragonite
					48	apatite
					49	opal
					50	goethite
		51	kaolinite			

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