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Title of article "Early Paleozoic Metamorphism at Two Crustal Levels and a Tectonic Model for the Pennsylvania-Delaware Piedmont"

Author(s) Mary Emma Wagner and LeeAnn Srogi

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EARLY PALEOZOIC METAMORPHISM AT TWO CRUSTAL LEVELS AND A TECTONIC MODEL FOR THE PENNSYLVANIA-DELAWARE PIEDMONT

Mary Emma Wagner and LeeAnn Srogi

Table A

CLINOPYROXENE CHEMICAL ANALYSES

Wilmington Complex

Sample #	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	SUM
13043A core # 1	50.91	0.27	2.35	11.50	0.49	13.00	21.58	0.33	100.43
13043A rim #1	50.55	0.28	2.16	10.99	0.47	12.88	21.98	0.36	99.67
13043A core #2	50.13	0.32	2.35	11.63	0.43	12.57	21.86	0.33	99.62
13043A rim #2	50.36	0.25	2.07	10.45	0.44	12.75	22.59	0.31	99.22
13043A core #3	51.09	0.19	2.07	11.55	0.51	12.90	21.36	0.42	100.09
13043A rim #3	50.69	0.20	2.12	10.93	0.43	12.79	22.00	0.42	99.58
13108B core #1	50.46	0.22	2.59	11.93	0.58	12.72	20.42	0.45	99.37
13108B rim #1	51.68	0.26	2.17	10.94	0.54	12.95	21.96	0.44	100.44
13108B core #2	51.15	0.40	2.50	12.13	0.59	12.72	20.30	0.48	100.27
13108B rim #2	50.75	0.30	2.32	11.18	0.55	12.68	21.26	0.47	99.51
13246 core	50.48	0.26	1.54	13.80	1.56	11.29	19.78	0.25	98.96
13246 rim	51.03	0.22	1.37	12.51	1.38	11.36	21.33	0.25	99.45

CLINOPYROXENES--CATIONS ON BASIS OF 6 O'S
Wilmington Complex

Sample #	Si	Ti	Al	Fe-tot	Mn	Mg	Ca	Na
13043A core #1	1.918	0.008	0.104	0.363	0.016	0.731	0.871	0.024
13043A rim #1	1.919	0.008	0.097	0.349	0.015	0.729	0.894	0.026
13043A core #2	1.910	0.009	0.106	0.371	0.014	0.714	0.892	0.024
13043A rim #2	1.920	0.007	0.093	0.333	0.014	0.725	0.923	0.023
13043A core #3	1.931	0.005	0.092	0.365	0.016	0.727	0.865	0.031
13043A rim #3	1.925	0.006	0.095	0.348	0.014	0.725	0.895	0.031
13108B core #1	1.921	0.006	0.116	0.380	0.019	0.722	0.833	0.033
13108B rim #1	1.937	0.007	0.096	0.328	0.017	0.724	0.882	0.032
13108B core #2	1.928	0.011	0.111	0.383	0.019	0.715	0.820	0.035
13108B rim #2	1.927	0.009	0.104	0.355	0.018	0.718	0.865	0.034
13246 core	1.951	0.008	0.070	0.447	0.051	0.651	0.819	0.019
13246 rim	1.957	0.006	0.062	0.401	0.045	0.650	0.876	0.019

CLINOPYROXENE CHEMICAL ANALYSES
West Chester Prong

Sample #	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	SUM
74-58	50.80	0.23	2.73	10.00	0.09	12.20	22.00	0.65	98.70
74-67	52.20	0.15	2.49	9.10	0.18	13.70	21.20	1.11	100.23
74-71	53.20	0.10	1.78	10.30	0.16	13.20	22.00	0.76	101.50
74-207A	50.90	0.10	1.52	8.60	0.16	14.20	22.60	0.53	98.60
74-322C	50.40	0.17	2.28	11.70	0.13	12.20	20.90	1.22	99.00

CLINOPYROXENES--CATIONS ON BASIS OF 6 O'S
West Chester Prong

Sample #	Si	Ti	Al	Fe-tot	Mn	Mg	Ca	Na
74-58	1.934	0.007	0.122	0.319	0.003	0.693	0.897	0.048
74-67	1.945	0.004	0.109	0.284	0.006	0.761	0.846	0.080
74-71	1.965	0.003	0.077	0.318	0.005	0.727	0.871	0.054
74-207A	1.935	0.003	0.068	0.274	0.005	0.805	0.920	0.039
74-322C	1.929	0.005	0.103	0.375	0.004	0.696	0.857	0.091

ORTHOPYROXENE CHEMICAL ANALYSES
Wilmington Complex

Sample #	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	SUM
14043A core	50.93	0.07	1.31	28.12	1.05	19.02	0.66	0.00	101.16
14043A rim	51.81	0.08	1.29	27.28	1.03	19.53	0.42	0.00	101.45
13075E	50.18	0.05	5.14	22.68	0.29	21.61	0.08	0.01	100.04
13108B	51.38	0.07	1.26	27.62	1.24	19.04	0.63	0.03	101.27
13246 core	49.26	0.20	0.61	29.82	3.71	14.60	1.13	0.00	99.34
13246 rim	49.77	0.18	0.56	30.49	3.50	14.70	0.59	0.01	99.80
13544	48.73	0.11	8.19	22.28	0.34	20.95	0.01	0.00	100.61
14030B	49.22	0.07	5.52	25.06	0.29	20.51	0.09	0.03	100.79

ORTHOPYROXENES--CATIONS ON BASIS OF 6 O'S
Wilmington Complex

Sample #	Si	Ti	Al	Fe-tot	Mn	Mg	Ca	Na
14043A core	1.937	0.002	0.059	0.894	0.034	1.079	0.027	0.000
14043A rim	1.945	0.002	0.052	0.868	0.034	1.106	0.022	0.000
13075E	1.869	0.002	0.226	0.707	0.009	1.200	0.003	0.001
13108B	1.947	0.002	0.056	0.876	0.040	1.076	0.026	0.002
13246 core	1.958	0.006	0.029	0.991	0.125	0.865	0.048	0.000
13246 rim	1.967	0.005	0.026	1.008	0.117	0.866	0.025	0.001
13544 a	1.801	0.003	0.357	0.689	0.011	1.155	0.001	0.000
14030B	1.843	0.002	0.244	0.785	0.009	1.145	0.004	0.002

ORTHOPYROXENE CHEMICAL ANALYSES
West Chester Prong

Sample #	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	SUM
74-67	52.40	0.09	1.00	26.20	0.32	21.10	0.46	0.00	101.57
74-71	52.60	0.04	0.90	27.50	0.32	19.00	0.54	0.00	100.90
74-270A	50.47	0.07	1.23	26.70	0.38	20.99	0.43	0.00	100.27
74-322C	50.30	0.04	0.76	29.30	0.33	18.30	0.45	0.00	99.48

ORTHOPYROXENES--CATIONS ON BASIS OF 6 O'S

West Chester Prong

Sample #	Si	Ti	Al	Fe-tot	Mn	Mg	Ca	Na
74-67	1.954	0.003	0.044	0.818	0.010	1.174	0.018	0.000
74-71	1.984	0.001	0.040	0.818	0.010	1.069	0.022	0.000
74-270A	1.922	0.002	0.055	0.850	0.012	1.191	0.017	0.000
74-322C	1.952	0.001	0.035	0.952	0.011	1.059	0.019	0.000

GARNET CHEMICAL ANALYSES
Wilmington Complex

Sample #	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Sum
13075E	38.96	0.04	22.09	28.82	1.21	8.72	1.89	101.73
13145A	39.03	0.00	22.09	28.96	0.62	8.94	1.40	101.04
13246	38.37	0.00	22.07	25.66	4.74	3.17	8.41	102.55
13544	39.71	0.00	22.67	25.75	1.06	11.25	0.92	101.36
14030B	39.00	0.00	22.07	31.05	1.45	8.05	1.66	103.28

GARNETS--CATIONS ON BASIS OF 12 O'S
Wilmington Complex

Sample #	Si	Ti	Al	Fe	Mn	Mg	Ca
13075E	2.974	0.002	1.986	1.841	0.079	0.993	0.154
13145A	2.989	0.000	1.993	1.856	0.040	1.021	0.115
13246	3.140	0.000	2.129	1.073	0.329	0.387	0.737
13544	2.984	0.000	2.007	1.619	0.068	1.260	0.074
14030B	2.962	0.000	1.975	1.974	0.093	0.911	0.135

GARNET CHEMICAL ANALYSES
West Chester Prong

Sample #	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Sum
74-58	38.60	0.06	21.20	26.00	0.68	4.58	9.08	100.20
74-67	39.20	0.12	20.90	27.70	0.91	6.20	6.62	101.65
74-71	38.50	0.03	21.30	28.80	0.96	4.89	6.45	100.93
74-150	37.33	0.03	22.77	28.56	1.00	3.54	8.68	100.94
74-270B	38.41	0.07	22.43	27.28	1.23	4.11	7.41	100.94
74-322C	37.60	0.09	22.00	29.40	0.96	4.52	6.45	101.02

GARNETS--CATIONS ON BASIS OF 12 O'S
West Chester Prong

Sample #	Si	Ti	Al	Fe	Mn	Mg	Ca
74-58	3.014	0.004	1.951	1.700	0.045	0.533	0.760
74-67	3.019	0.007	1.897	1.786	0.059	0.712	0.546
74-71	3.004	0.002	1.958	1.881	0.063	0.569	0.539
74-150	2.983	0.004	2.051	1.775	0.081	0.476	0.617
74-270B	2.983	0.004	2.051	1.775	0.081	0.476	0.617
74-322C	2.945	0.002	2.030	1.927	0.064	0.528	0.541

PLAGIOCLASE CHEMICAL ANALYSES
Wilmington Complex

Sample	SiO2	TiO2	Al2O3	FeO	MnO	CaO	Na2O	K2O	Sum
13075E	56.34	0.03	27.00	0.10	0.03	9.88	5.84	0.13	99.35
13544	60.77	0.02	24.74	0.06	0.00	5.58	8.33	0.12	99.62
14030B	58.61	0.01	26.18	0.13	0.00	7.95	7.03	0.26	100.17

PLAGIOCLASE--CATIONS ON BASIS OF 8 O'S
Wilmington Complex

Sample #	Si	Ti	Al	Fe	Mn	Ca	Na	K
13075E	2.546	0.001	1.438	0.004	0.001	0.484	0.512	0.008
13544	2.709	0.001	1.299	0.002	0.000	0.266	0.720	0.007
14030B	2.618	0.000	1.378	0.005	0.000	0.381	0.608	0.015

PLAGIOCLASE CHEMICAL ANALYSES
West Chester Prong

Sample	SiO2	TiO2	Al2O3	FeO	MnO	CaO	Na2O	K2O	Sum
74-58	61.60	0.00	24.30	0.13	0.00	5.90	7.80	0.28	100.01
74-67	61.90	0.00	24.70	0.00	0.00	5.70	8.00	0.42	100.72
74-71	63.10	0.00	23.90	0.00	0.00	5.00	9.50	0.30	101.80
74-270A	55.80	0.00	27.10	0.23	0.00	9.00	6.40	0.10	98.63
74-322C	61.80	0.00	23.60	0.00	0.00	4.70	9.00	0.08	99.18

PLAGIOCLASE--CATIONS ON BASIS OF 8 O'S
West Chester Prong

Sample #	Si	Ti	Al	Fe	Mn	Ca	Na	K
74-58	2.733	0.000	1.271	0.000	0.000	0.271	0.688	0.024
74-67	2.727	0.000	1.282	0.000	0.000	0.269	0.683	0.024
74-71	2.755	0.000	1.230	0.000	0.000	0.234	0.804	0.017
74-270A	2.542	0.000	1.455	0.009	0.000	0.439	0.565	0.006
74-322C	2.760	0.000	1.242	0.000	0.000	0.225	0.779	0.005

BIOTITE CHEMICAL ANALYSES
Wilmington Complex

Sample #	SiO2	TiO2	Al2O3	FeO	MnO	MgO	Na2O	K2O	Sum
13075E	36.43	4.22	16.32	14.08	0.07	14.57	0.10	9.60	95.40
13145A	35.89	4.38	17.24	13.14	0.04	13.24	0.12	9.09	93.14
13544	37.50	4.35	17.45	11.84	0.05	16.59	0.14	9.56	97.48
14030B	36.33	4.99	15.94	16.67	0.02	13.18	0.01	9.94	97.08

BIOTITES--CATIONS ON BASIS OF 22 O'S
Wilmington Complex

Sample #	Si	Ti	Al	Fe	Mn	Mg	Na	K
13075E	5.422	0.473	2.863	1.752	0.008	3.231	0.029	1.823
13145A	5.427	0.498	3.071	1.661	0.005	2.984	0.035	1.753
13544	5.382	0.470	2.951	1.421	0.007	3.548	0.040	1.750
14030B	5.390	0.566	2.786	2.068	0.002	2.915	0.004	1.882