

APPENDIX 3A

EMP analyses of biotite from the biotite-muscovite granites of the Strzelin Massif

	Gromnik							Gębczyce							
	1	2	3	4	5	6	7	1	2	3	4	5	6	7	8
SiO ₂	34.59	34.59	35.14	35.03	34.70	34.12	33.21	35.35	34.70	34.15	34.53	33.45	33.31	33.54	33.42
TiO ₂	3.07	3.02	3.47	3.36	2.48	2.34	2.56	3.03	4.76	3.01	3.02	3.10	2.89	3.05	2.94
Al ₂ O ₃	18.55	18.73	18.16	18.04	18.16	18.87	18.77	19.11	16.25	18.63	17.93	18.26	17.84	18.14	18.15
Cr ₂ O ₃	0	0	0	0	0.03	0.05	0	0	0.01	0.02	0.01	0	0	0	0
MgO	5.35	5.38	5.32	5.43	6.54	5.54	5.74	3.46	4.51	3.47	3.71	3.52	3.59	3.63	3.53
CaO	0	0	0	0	0.04	0	0.01	0.03	0	0.04	0	0	0.12	0	0.08
MnO	0.51	0.37	0.30	0.40	0.33	0.28	0.40	0.60	0.65	0.70	0.84	0.83	0.75	0.71	0.86
FeO	23.91	23.69	24.22	23.71	24.06	24.04	25.07	24.57	25.47	25.70	25.55	26.38	25.80	26.15	25.89
BaO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na ₂ O	0.05	0.03	0.09	0.07	0.12	0.09	0.02	0	0.01	0.02	0.01	0	0.07	0.03	0.05
K ₂ O	9.51	9.43	9.60	9.55	8.53	9.12	8.44	9.11	9.32	9.11	9.53	9.38	9.05	9.44	9.06
H ₂ O	3.85	3.85	3.88	3.86	3.84	3.81	3.78	3.85	3.81	3.79	3.79	3.76	3.71	3.76	3.73
Sum	99.39	99.09	100.18	99.45	98.83	98.26	98.00	99.11	99.49	98.64	98.92	98.68	97.13	98.45	97.71
based on 22 O															
Si	5.393	5.396	5.435	5.449	5.413	5.374	5.267	5.513	5.460	5.409	5.465	5.340	5.388	5.360	5.370
AlIV	2.607	2.604	2.565	2.551	2.587	2.626	2.733	2.487	2.540	2.591	2.535	2.660	2.612	2.640	2.630
Z	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
Ti	0.360	0.354	0.404	0.393	0.291	0.277	0.305	0.355	0.564	0.359	0.360	0.372	0.351	0.366	0.355
AlVI	0.801	0.840	0.745	0.757	0.752	0.877	0.775	1.024	0.472	0.886	0.809	0.775	0.787	0.777	0.807
Cr	0	0	0	0	0.004	0.006	0	0	0.001	0.002	0.001	0	0	0	0
Fe ⁺²	3.117	3.091	3.132	3.084	3.139	3.166	3.325	3.204	3.352	3.404	3.381	3.521	3.490	3.496	3.48
Mn	0.067	0.049	0.039	0.053	0.044	0.037	0.054	0.079	0.086	0.094	0.112	0.112	0.103	0.095	0.117
Mg	1.243	1.251	1.227	1.259	1.521	1.301	1.357	0.805	1.058	0.819	0.876	0.837	0.864	0.865	0.846
Y	5.588	5.585	5.547	5.546	5.751	5.664	5.816	5.467	5.533	5.564	5.539	5.617	5.595	5.599	5.605
Ca	0	0	0	0	0.007	0	0.002	0.004	0	0.007	0	0	0.021	0	0.014
Ba	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na	0.015	0.009	0.027	0.021	0.036	0.027	0.006	0	0.003	0.005	0.003	0	0.021	0.011	0.017
K	1.892	1.877	1.894	1.895	1.698	1.832	1.707	1.812	1.870	1.841	1.925	1.909	1.868	1.924	1.857
X	1.907	1.886	1.921	1.916	1.741	1.859	1.715	1.816	1.873	1.853	1.928	1.909	1.910	1.935	1.888
Sum	15.495	15.471	15.468	15.462	15.492	15.523	15.531	15.283	15.406	15.417	15.467	15.526	15.505	15.534	15.493
fm	0.71	0.71	0.72	0.71	0.67	0.71	0.71	0.80	0.76	0.81	0.79	0.81	0.80	0.80	0.80

APPENDIX 3B

	Gębczyce		Górka Sobocka											Gęsiniec	
	9	10	1	2	3	4	5	6	7	8	9	10	11	1	2
SiO ₂	33.64	33.33	33.47	33.54	34.05	33.50	33.90	34.28	34.58	34.36	34.28	33.77	34.59	34.17	34.34
TiO ₂	3.21	2.88	3.34	3.52	3.90	3.33	3.40	3.52	3.15	3.29	3.74	2.63	3.08	3.11	3.91
Al ₂ O ₃	18.35	18.00	17.89	18.2	18.08	17.85	18.07	18.63	18.44	18.84	18.34	18.74	18.53	18.16	18.18
Cr ₂ O ₃	0	0	0.02	0.02	0	0	0	0	0	0	0.02	0	0.02	0	0
MgO	3.62	3.71	3.57	3.66	3.77	3.67	3.71	3.82	3.84	3.97	3.80	3.83	4.08	4.72	5.09
CaO	0	0.03	0.03	0	0	0	0	0	0.01	0	0	0	0.01	0	0
MnO	0.69	0.77	0.53	0.61	0.58	0.74	0.77	0.6	0.74	0.72	0.54	0.48	0.54	0.51	0.52
FeO	24.99	26.64	26.76	26.15	24.85	25.10	25.25	24.68	25.36	25.47	25.30	24.91	25.67	25.69	24.06
BaO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na ₂ O	0.02	0	0.06	0	0.03	0.02	0.06	0.09	0.01	0.08	0.03	0.04	0.04	0.03	0.02
K ₂ O	9.18	8.77	9.06	9.16	9.08	9.03	8.61	9.04	8.78	9.02	9.17	8.53	8.81	9.26	9.41
H ₂ O	3.75	3.74	3.75	3.77	3.78	3.72	3.76	3.80	3.81	3.83	3.82	3.74	3.82	3.82	3.84
Sum	97.45	97.87	98.48	98.63	98.12	96.96	97.53	98.46	98.72	99.58	99.04	96.67	99.19	99.47	99.37
based on 22 O															
Si	5.391	5.357	5.350	5.337	5.403	5.402	5.416	5.407	5.447	5.375	5.395	5.421	5.425	5.370	5.363
Al _{IV}	2.609	2.643	2.650	2.663	2.597	2.598	2.584	2.593	2.553	2.625	2.605	2.579	2.575	2.630	2.637
Z	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
Ti	0.386	0.348	0.401	0.421	0.465	0.404	0.408	0.417	0.373	0.387	0.443	0.317	0.363	0.367	0.459
Al _{VI}	0.856	0.766	0.720	0.750	0.784	0.794	0.818	0.870	0.870	0.849	0.797	0.966	0.850	0.734	0.710
Cr	0	0	0.003	0.003	0	0	0	0	0	0	0.002	0	0.002	0	0
Fe ⁺²	3.348	3.58	3.577	3.48	3.298	3.385	3.373	3.255	3.340	3.332	3.330	3.344	3.367	3.376	3.143
Mn	0.094	0.105	0.072	0.082	0.078	0.101	0.104	0.080	0.099	0.095	0.072	0.065	0.072	0.068	0.069
Mg	0.864	0.888	0.851	0.868	0.892	0.882	0.884	0.898	0.902	0.926	0.892	0.917	0.954	1.105	1.184
Y	5.548	5.687	5.624	5.604	5.517	5.566	5.587	5.520	5.584	5.589	5.536	5.609	5.608	5.65	5.565
Ca	0	0.004	0.005	0	0	0	0	0	0.002	0	0	0	0.002	0	0
Ba	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Na	0.007	0	0.019	0	0.009	0.006	0.019	0.028	0.003	0.024	0.009	0.012	0.012	0.008	0.006
K	1.877	1.798	1.848	1.859	1.838	1.858	1.755	1.819	1.764	1.800	1.841	1.747	1.763	1.856	1.875
X	1.884	1.802	1.872	1.859	1.847	1.864	1.774	1.847	1.769	1.824	1.850	1.759	1.777	1.864	1.881
Sum	15.432	15.489	15.496	15.463	15.364	15.430	15.361	15.367	15.353	15.413	15.386	15.368	15.385	15.514	15.446
fm	0.79	0.80	0.81	0.80	0.79	0.79	0.79	0.78	0.79	0.78	0.79	0.78	0.78	0.75	0.73

APPENDIX 3C

	Gęsiniec						Strzelin Quarry							
	3	4	5	6	7	8	1	2	3	4	5	6	7	8
SiO ₂	33.97	34.11	34.25	34.44	36.58	34.20	32.65	33.05	32.77	33.63	32.99	33.05	32.92	32.93
TiO ₂	3.94	2.80	3.33	3.50	2.92	3.82	2.17	2.03	2.29	2.21	2.02	2.40	0.34	0.46
Al ₂ O ₃	18.26	18.90	18.27	18.54	18.25	18.61	19.36	19.97	19.42	20.24	19.70	19.43	19.82	19.90
Cr ₂ O ₃	0.02	0.03	0.03	0.04	0.02	0	0.02	0	0.01	0.05	0.03	0	0.02	0.01
MgO	4.80	5.20	5.10	4.95	8.73	4.95	3.26	3.36	3.29	3.32	3.51	3.30	3.82	3.79
CaO	0	0	0.01	0	0.02	0	0	0.02	0.03	0	0	0.09	0	0.04
MnO	0.53	0.60	0.47	0.57	0.49	0.59	0.55	0.64	0.69	0.71	0.62	0.51	1.23	1.12
FeO	24.52	25.37	23.87	25.11	20.00	24.28	28.13	26.61	27.44	26.24	27.49	26.88	26.81	26.87
BaO	0	0	0	0	0	0	0.05	0.05	0.05	0.13	0	0	0	0
Na ₂ O	0.03	0.05	0.02	0.06	0.07	0.07	0.08	0.06	0.04	0.14	0.07	0.12	0.07	0.07
K ₂ O	9.22	9.29	9.36	9.37	9.37	9.28	9.39	8.93	9.61	9.43	9.14	9.13	9.30	9.23
H ₂ O	3.82	3.85	3.81	3.87	3.98	3.85								
Sum	99.11	100.20	98.52	100.45	100.43	99.65	95.66	94.72	95.64	96.10	95.57	94.91	94.33	94.42
based on 22 O														
Si	5.331	5.310	5.390	5.341	5.51	5.328	5.215	5.267	5.225	5.280	5.238	5.271	5.303	5.295
AlIV	2.669	2.690	2.610	2.659	2.490	2.672	2.785	2.733	2.775	2.720	2.762	2.729	2.697	2.705
Z	8	8	8	8	8	8	8	8	8	8	8	8	8	8
Ti	0.465	0.328	0.394	0.408	0.330	0.448	0.261	0.243	0.275	0.261	0.241	0.288	0.041	0.056
AlVI	0.709	0.778	0.778	0.730	0.750	0.744	0.859	1.018	0.875	1.026	0.926	0.924	1.067	1.066
Cr	0.002	0.003	0.004	0.005	0.003	0	0.002	0	0.001	0.006	0.004	0	0.003	0.001
Fe ⁺²	3.217	3.303	3.141	3.256	2.520	3.163	3.757	3.546	3.659	3.445	3.651	3.586	3.613	3.613
Mn	0.070	0.078	0.063	0.075	0.063	0.078	0.074	0.087	0.093	0.094	0.083	0.068	0.168	0.152
Mg	1.123	1.206	1.196	1.145	1.961	1.150	0.776	0.798	0.782	0.776	0.832	0.786	0.917	0.909
Y	5.586	5.696	5.576	5.619	5.627	5.583	5.729	5.692	5.685	5.608	5.737	5.652	5.809	5.797
Ca	0	0	0.001	0	0.003	0	0	0.003	0.004	0	0	0.016	0	0.007
Ba	0	0	0	0	0	0	0.003	0.003	0.003	0.008	0	0	0	0
Na	0.009	0.015	0.007	0.017	0.019	0.021	0.024	0.018	0.011	0.043	0.022	0.037	0.021	0.022
K	1.845	1.844	1.880	1.853	1.800	1.844	1.913	1.816	1.955	1.889	1.853	1.858	1.911	1.894
X	1.854	1.859	1.888	1.870	1.822	1.865	1.940	1.84	1.973	1.940	1.875	1.911	1.932	1.923
Sum	15.44	15.555	15.464	15.489	15.449	15.448	15.669	15.532	15.658	15.548	15.612	15.563	15.741	15.720
fm	0.74	0.73	0.72	0.74	0.56	0.73	0.83	0.82	0.82	0.82	0.81	0.82	0.80	0.80

APPENDIX 3D

	Strzelin I Quarry													
	9	10	11	12	13	14	15	16	17	18	19	20	21	22
SiO ₂	33.45	32.78	32.95	33.24	32.04	32.4	33.45	33.27	31.27	32.71	32.24	32.49	32.69	32.63
TiO ₂	0.15	0.17	1.86	2.32	1.79	0	0.01	0	2.56	1.83	1.97	3.18	2.82	3.19
Al ₂ O ₃	19.51	19.40	18.88	18.73	18.75	20.98	21.17	21.08	19.96	19.31	19.24	19.3	19.08	18.34
Cr ₂ O ₃	0	0.01	0	0.03	0	0.01	0	0	0.03	0	0	0	0	0
MgO	4.77	4.90	3.41	3.30	3.41	3.96	4.12	4.10	2.89	2.92	2.94	2.61	2.85	2.79
CaO	0	0	0	0	0.01	0.33	0	0.05	0.02	0.02	0	0.05	0.01	0
MnO	01.39	1.68	1.15	1.13	1.30	1.78	1.75	1.91	1.02	1.18	1.07	1.09	1.08	1.14
FeO	26.08	27.19	28.08	27.55	28.06	23.98	24.21	24.50	29.76	27.83	28.56	26.58	27.10	26.98
BaO	0.19	0.07	0.08	0	0.02	0	0.09	0	0	0	0	0.15	0.2	0.04
Na ₂ O	0.05	0.07	0.07	0.05	0.02	0.08	0.06	0.14	0.05	0.04	0.02	0.07	0.06	0.07
K ₂ O	9.51	9.04	9.38	9.36	9.06	8.61	9.56	9.17	7.48	9.48	8.70	9.28	9.33	9.47
H ₂ O														
Sum	95.10	95.31	95.86	95.71	94.46	92.13	94.42	94.22	95.04	95.32	94.74	94.80	95.22	94.65
based on 22 O														
Si	5.336	5.246	5.265	5.297	5.206	5.269	5.318	5.302	5.037	5.251	5.208	5.217	5.239	5.268
AlIV	2.664	2.754	2.735	2.703	2.794	2.731	2.682	2.698	2.963	2.749	2.792	2.783	2.761	2.732
Z	8	8	8	8	8	0	0	0	0	0	0	0	0	0
Ti	0.018	0.020	0.224	0.278	0.218	0	0.001	0	0.310	0.221	0.239	0.384	0.339	0.387
AlVI	1.004	0.906	0.820	0.816	0.798	1.290	1.284	1.260	0.824	0.905	0.871	0.869	0.843	0.758
Cr	0	0.002	0	0.003	0	0.002	0	0	0.003	0	0	0	0	0
Fe ⁺²	3.479	3.640	3.752	3.672	3.814	3.261	3.218	3.265	4.008	3.736	3.857	3.569	3.632	3.642
Mn	0.188	0.227	0.156	0.152	0.179	0.245	0.235	0.258	0.139	0.161	0.146	0.148	0.147	0.155
Mg	1.134	1.17	0.812	0.784	0.825	0.959	0.976	0.974	0.693	0.698	0.707	0.624	0.681	0.671
Y	5.823	5.965	5.764	5.705	5.834	5.757	5.714	5.757	5.977	5.721	5.82	5.594	5.642	5.613
Ca	0	0	0	0	0.002	0.057	0	0.008	0.004	0.004	0	0.008	0.001	0
Ba	0.012	0.004	0.005	0	0.001	0	0.006	0	0	0	0	0.009	0.013	0.002
Na	0.016	0.021	0.020	0.016	0.005	0.025	0.017	0.042	0.017	0.011	0.006	0.022	0.020	0.022
K	1.936	1.847	1.912	1.903	1.879	1.787	1.938	1.864	1.536	1.942	1.792	1.901	1.907	1.950
X	1.964	1.872	1.937	1.919	1.887	1.869	1.961	1.914	1.557	1.957	1.798	1.94	1.941	1.974
Sum	15.787	15.837	15.701	15.624	15.721	15.626	15.675	15.671	15.534	15.678	15.618	15.534	15.583	15.587
fm	0.75	0.76	0.82	0.82	0.82	0.77	0.77	0.77	0.85	0.84	0.85	0.85	0.84	0.84