

# Geological Magazine

## **Petrogenetic and tectonic inferences from the study of Mt. Cer Pluton (West Serbia)**

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### **APPENDIX**

A1 - Analytical techniques for mineral chemistry,  $^{40}\text{K}/^{39}\text{Ar}$  geochronology, whole-rock major and trace elements, Rare Earth Elements and trace elements, Sr and Nd isotopes.

A2 - References for the various sources of experimental partial melts used to draw figure 10.

Figure A - Q'(F')-ANOR classification diagram for the Mt. Cer plutonic rocks (Streckeisen & Le Maitre, 1979). Also shown are H-BG (hornblende-biotite granodiorites) and TMG (two mica granites) rocks from the Mt. Bukulja pluton (Cvetković et al. 2007), and leucominettes and dacites from Veliki Majdan (Prelević et al. 2004).

Figure B - K<sub>2</sub>O vs. SiO<sub>2</sub> plot (after Peccerillo & Taylor, 1976. ME: Mafic Enclaves; QMZD: quartz monzonites to quartz monzodiorites; GDS: granodiorites to quartz monzonites from Stražanica; TMG: two-mica granites. Other symbols as in figure A.

Table A – Selected microprobe analyses of: TA1 – plagioclase; TA2 – Kfeldspar; TA3 - amphibole; TA4 – biotite; TA5 – muscovite. Analytical technique in A1.

Table B – TB1 - Modelled bulk partition coefficients for a series of trace elements used to calculate the two lines of descents reported in figure 8. The two lines of descent bound a set of models with intermediate values of bulk partition coefficients. TB2 - Parameter  $p$  calculated for QMZD rocks according to equation 6 of Aitchison & Forrest (1994).

## Analytical techniques

**Minerals:** The mineral phases were analyzed at the Scanning Microscope Laboratory, Thessaloniki University, using a LINK AN 1000 EDS microanalyser attached to a JEOL JSM-840 Scanning Electron Microscope. Operating conditions were 15 kV accelerating voltage, beam current 3nA, surface electron beam  $1\mu\text{m}^2$  and counting time 80 seconds. The ZAF-4/FLS software provided by LINK was used for corrections. Natural minerals (albite, orthoclase, diopside, wollastonite, olivine, periclase) and pure metals were used as standards.

**Ages:**  $^{40}\text{K}$ – $^{39}\text{Ar}$  dating were applied on mineral fractions separated using magnetic separator and heavy liquids. The purity of the mineral fractions was improved by hand-picking technique under binocular microscope. For potassium determinations approximately 0.05 g of finely ground sample was digested in acids and finally dissolved in 0.2M HCl. Potassium was determined by flame photometry with a Na buffer and Li internal standard. The inter-laboratory standards Asia 1/65, LP-6, HD-B1, GL-O were used for checking the measurements. Argon was extracted from the samples by RF fusion in Mo crucibles, in previously backed stainless steel vacuum system.  $^{38}\text{Ar}$  spike was added from gas pipette system and the evolved gases were cleaned using Ti and SAES getters and liquid nitrogen traps, respectively. The purified Ar was transported directly into the mass spectrometer and Ar isotope ratio was measured in the static mode, using 15 cm radius magnetic sector type mass spectrometer built in Debrecen. Details of the instruments, the applied methods and results of calibration have been described in Balogh (1985).

**Whole-rock major and trace elements:** Major elements (except FeO, MgO, Na<sub>2</sub>O and LOI, determined by wet chemical analysis) were analyzed by XRF at the Department of Earth Sciences, Univeristy of Perugia, with full major-elements matrix correction after Franzini & Leoni (1972). Trace elements were also analyzed by XRF after Kaye (1965). Precision is better than 10% for V, Cr, Ni, Y, Zr and Ba, and better than 5% for all the other elements. The accuracy has been tested on international standards, and is better than 10%.

**Rare Earth Elements and trace elements:** Representative samples have been analyzed by ICP-MS for REE and Pb, U, and Th at the Department of Earth Sciences, University of Bristol (U.K.). 0.2 g of powdered rock sample was dissolved by mixed acid digestion and the resulting solution was made up to 100 ml; dissolution blanks were also prepared. The instrument was calibrated for each element using certified standard solutions. The solutions were diluted to produce three working standards containing 10, 50 and 100 ppb of each element. The linear least squares fit gave a correlation coefficient better than 0.995 for all elements and the average intercept was less than 0.1 ppb.

**Sr and Nd isotopes:** Sr and Nd isotope analyses were performed in the Department of Earth and Atmospheric Sciences, University of Alberta, Canada through Geospec Consultants Ltd. Sample powders were accurately weighed and then spiked with a mixed  $^{84}\text{Sr}$  -  $^{87}\text{Rb}$  spike to enable isotope dilution analysis, and dissolved in a HF:HNO<sub>3</sub> mix at 100°C for 48 hours. After evaporation in HEPA-filtered air, the resultant fluoride residue was converted to chloride form with HCl, and Rb and Sr chemically separated by standard cation-exchange chromatographic methods. Chemical processing blanks are <400 picograms of Sr and <100 picograms Rb, which are insignificant relative to the amount of sample processed. Isotopic analysis is performed using Thermal Ionization Mass Spectrometry. The average  $^{87}\text{Sr}/^{86}\text{Sr}$  value of the National Institute of Standards and Technology Standard Reference Material 987 Sr isotopic standard analyzed over the time period of these samples is  $0.71027 \pm 0.00003$  (1 SD), within error of the accepted value (0.71024-0.71025).

For Nd isotopic analysis, separate sample powders were accurately weighed and spiked with a mixed  $^{149}\text{Sm}$ - $^{150}\text{Nd}$  spike to enable isotope dilution analysis, and dissolved in a HF:HNO<sub>3</sub> mix at 160°C for 96 hours. After evaporation in HEPA-filtered air, the resultant fluoride residue was converted to chloride form with HCl, and Sm and Nd chemically separated by standard cation-exchange chromatographic and HDEHP-based methods. Chemical processing blanks are <250 picograms of Sm and Nd, which are insignificant relative to the amount of sample processed. Isotopic analysis was performed using Thermal Ionization Mass Spectrometry. The average

$^{143}\text{Nd}/^{144}\text{Nd}$  value the JNdi-1 isotopic standard analyzed over the time period of this sample is  $0.512110 \pm 0.000012$  (1 SD), which is equivalent to a value of the La Jolla isotopic standard of 0.511853.

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## A2

### REFERENCES FOR THE VARIOUS SOURCES OF EXPERIMENTAL PARTIAL MELTS USED TO DRAW FIGURE 10.

#### GREYWACKES AND PELITES

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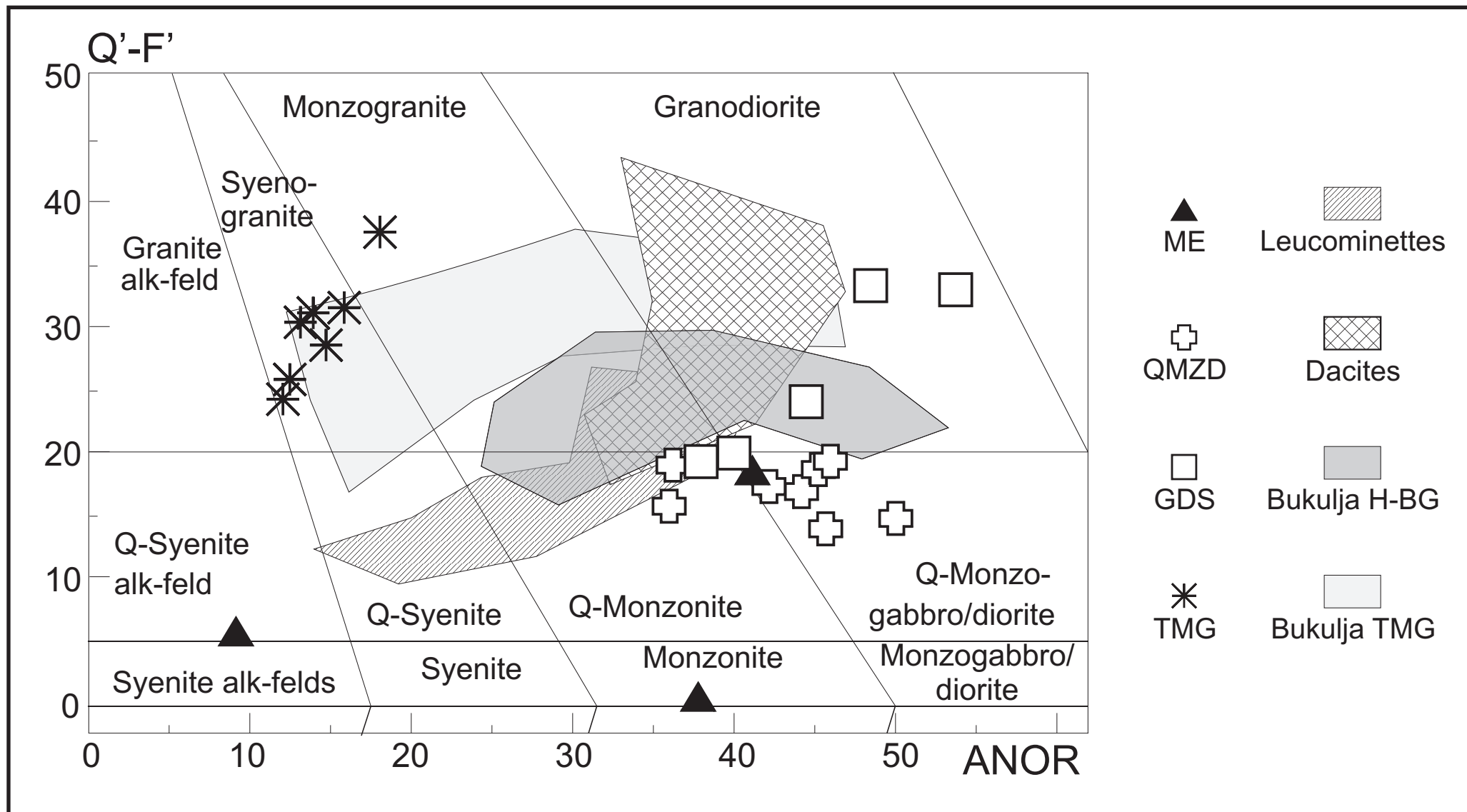


FIGURE A1 - Q'(F')-ANOR classification diagram for the Mt. Cer plutonic rocks (Streckeisen & Le Maitre, 1979).

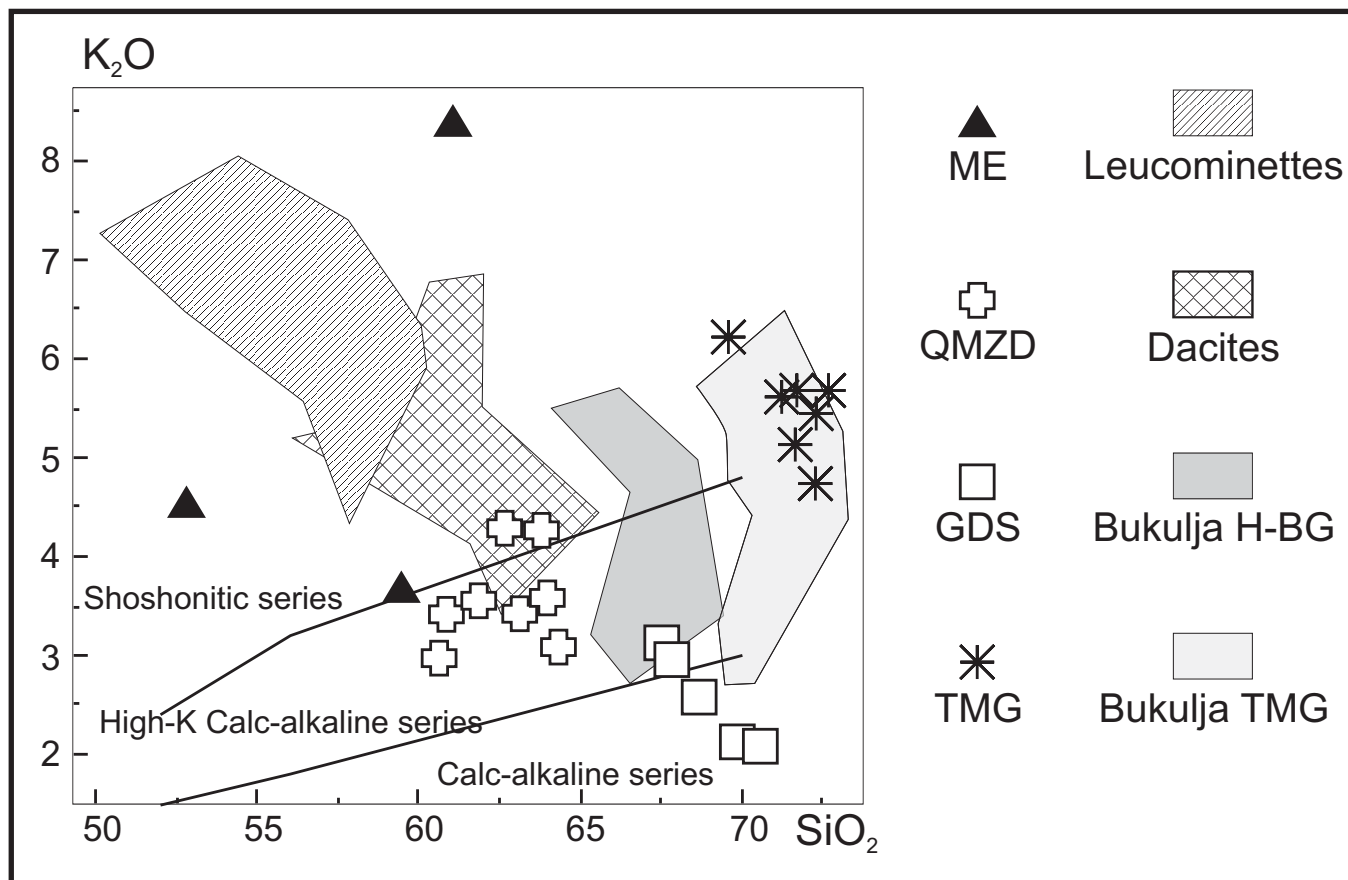


FIGURE A2 - K<sub>2</sub>O vs. SiO<sub>2</sub> plot (after Peccerillo & Taylor, 1976). Also shown are H-BG and TMG rocks from the Mt. Bukulja pluton (Cvetković et al. 2007), and minettes and leucominettes, and dacite, from Veliki Majdan (Prelević et al. 2004).



Table A1 - Chemical data on plagioclases from Mt. Cer pluton.

| Rock type              | ME     | ME     | ME    | ME    | QMZD   | QMZD   | QMZD   | QMZD   | QMZD  | QMZD  | QMZD   |
|------------------------|--------|--------|-------|-------|--------|--------|--------|--------|-------|-------|--------|
| Sample                 | 100x   | 100x   | 103x  | 103x  | 108    | 108    | 100    | 100    | 113   | 113   | 102    |
| rim/core               | r      | c      | r     | c     | r      | c      | r      | c      | r     | c     | r      |
| SiO2 wt%               | 57.53  | 58.76  | 59.04 | 59.05 | 57.69  | 57.88  | 58.73  | 58.80  | 59.28 | 57.98 | 59.47  |
| TiO2                   | 0.00   | 0.00   | 0.00  | 0.00  | 0.00   | 0.00   | 0.04   | 0.00   | 0.00  | 0.00  | 0.00   |
| Al2O3                  | 26.60  | 26.00  | 25.11 | 25.23 | 26.41  | 26.49  | 25.56  | 25.99  | 25.04 | 26.05 | 25.12  |
| FeOt                   | 0.07   | 0.16   | 0.20  | 0.00  | 0.23   | 0.09   | 0.15   | 0.13   | 0.10  | 0.10  | 0.26   |
| MnO                    | 0.00   | 0.00   | 0.00  | 0.04  | 0.00   | 0.00   | 0.00   | 0.00   | 0.00  | 0.00  | 0.00   |
| MgO                    | 0.03   | 0.08   | 0.00  | 0.00  | 0.03   | 0.02   | 0.08   | 0.00   | 0.00  | 0.02  | 0.03   |
| CaO                    | 8.46   | 7.16   | 6.33  | 6.56  | 7.86   | 7.94   | 7.29   | 7.50   | 6.64  | 7.56  | 6.62   |
| Na2O                   | 7.40   | 7.87   | 8.82  | 8.63  | 7.69   | 7.81   | 8.24   | 5.81   | 8.40  | 7.90  | 8.27   |
| K2O                    | 0.23   | 0.30   | 0.21  | 0.22  | 0.26   | 0.17   | 0.20   | 0.23   | 0.28  | 0.29  | 0.24   |
| BaO                    | 0.00   | 0.00   | 0.00  | 0.00  | 0.05   | 0.05   | 0.11   | 0.02   | 0.02  | 0.07  | 0.06   |
| Total                  | 100.30 | 100.33 | 99.71 | 99.73 | 100.23 | 100.45 | 100.39 | 100.42 | 99.76 | 99.97 | 100.04 |
| Site allocations (8 O) |        |        |       |       |        |        |        |        |       |       |        |
| Si                     | 2.578  | 2.622  | 2.651 | 2.650 | 2.586  | 2.588  | 2.625  | 2.622  | 2.658 | 2.604 | 2.658  |
| Al                     | 1.405  | 1.367  | 1.329 | 1.334 | 1.395  | 1.396  | 1.347  | 1.366  | 1.323 | 1.379 | 1.323  |
| Fe3+                   | 0.003  | 0.006  | 0.008 | 0.000 | 0.009  | 0.004  | 0.006  | 0.005  | 0.004 | 0.004 | 0.010  |
| Ti                     | 0.000  | 0.000  | 0.000 | 0.000 | 0.000  | 0.000  | 0.001  | 0.000  | 0.000 | 0.000 | 0.000  |
| Z                      | 3.985  | 3.995  | 3.987 | 3.984 | 3.990  | 3.987  | 3.979  | 3.992  | 3.985 | 3.986 | 3.991  |
| Mg                     | 0.002  | 0.006  | 0.000 | 0.000 | 0.002  | 0.001  | 0.005  | 0.000  | 0.000 | 0.001 | 0.002  |
| Ca                     | 0.406  | 0.342  | 0.304 | 0.315 | 0.378  | 0.380  | 0.349  | 0.359  | 0.319 | 0.364 | 0.317  |
| Na                     | 0.643  | 0.681  | 0.768 | 0.751 | 0.668  | 0.677  | 0.714  | 0.671  | 0.731 | 0.688 | 0.716  |
| K                      | 0.013  | 0.017  | 0.012 | 0.013 | 0.015  | 0.009  | 0.011  | 0.013  | 0.016 | 0.017 | 0.014  |
| Ba                     | 0.000  | 0.000  | 0.000 | 0.000 | 0.001  | 0.001  | 0.002  | 0.000  | 0.001 | 0.001 | 0.001  |
| Or                     | 0.012  | 0.016  | 0.011 | 0.012 | 0.015  | 0.010  | 0.012  | 0.013  | 0.016 | 0.017 | 0.014  |
| Ab                     | 0.605  | 0.651  | 0.708 | 0.695 | 0.627  | 0.634  | 0.661  | 0.644  | 0.685 | 0.641 | 0.683  |
| An                     | 0.383  | 0.333  | 0.281 | 0.293 | 0.358  | 0.356  | 0.327  | 0.343  | 0.299 | 0.342 | 0.303  |

Table A1 (cont) - Chemical data on plagioclases from Mt. Cer pluton.

| Rock type              | QMZD  | QMZD  | QMZD   | QMZD   | QMZD  | GDS   | GDS   | TMG    | TMG    | TMG    | TMG    |
|------------------------|-------|-------|--------|--------|-------|-------|-------|--------|--------|--------|--------|
| Sample                 | 102   | 101   | 101    | 103    | 103   | 115   | 115   | 107    | 110    | 106    | 106    |
| rim/core               | c     | r     | c      | r      | c     | r     | c     | c      | c      | r      | c      |
| SiO2 wt%               | 57.02 | 58.15 | 58.75  | 58.91  | 58.86 | 61.54 | 59.72 | 64.41  | 65.81  | 65.13  | 63.59  |
| TiO2                   | 0.00  | 0.00  | 0.00   | 0.00   | 0.00  | 0.00  | 0.00  | 0.00   | 0.00   | 0.00   | 0.00   |
| Al2O3                  | 26.34 | 25.99 | 25.67  | 25.70  | 25.21 | 23.39 | 24.56 | 22.00  | 21.73  | 21.41  | 22.30  |
| FeOt                   | 0.23  | 0.08  | 0.06   | 0.25   | 0.14  | 0.09  | 0.20  | 0.00   | 0.00   | 0.00   | 0.00   |
| MnO                    | 0.00  | 0.05  | 0.00   | 0.00   | 0.00  | 0.00  | 0.00  | 0.00   | 0.00   | 0.00   | 0.00   |
| MgO                    | 0.00  | 0.05  | 0.01   | 0.05   | 0.04  | 0.00  | 0.01  | 0.00   | 0.00   | 0.00   | 0.00   |
| CaO                    | 8.38  | 7.64  | 7.32   | 7.37   | 6.90  | 4.66  | 5.82  | 2.97   | 1.88   | 1.77   | 3.07   |
| Na2O                   | 7.49  | 7.65  | 8.10   | 8.02   | 8.27  | 9.43  | 8.91  | 10.58  | 10.52  | 11.45  | 10.82  |
| K2O                    | 0.23  | 0.22  | 0.11   | 0.22   | 0.27  | 0.22  | 0.15  | 0.27   | 0.19   | 0.28   | 0.19   |
| BaO                    | 0.12  | 0.00  | 0.04   | 0.03   | 0.00  | 0.09  | 0.06  | 0.00   | 0.00   | 0.03   | 0.05   |
| Total                  | 99.80 | 99.76 | 100.06 | 100.53 | 99.69 | 99.42 | 99.43 | 100.24 | 100.13 | 100.06 | 100.00 |
| Site allocations (8 O) |       |       |        |        |       |       |       |        |        |        |        |
| Si                     | 2.573 | 2.610 | 2.629  | 2.626  | 2.644 | 2.753 | 2.682 | 2.842  | 2.887  | 2.874  | 2.818  |
| Al                     | 1.400 | 1.376 | 1.354  | 1.351  | 1.335 | 1.233 | 1.300 | 1.144  | 1.123  | 1.114  | 1.165  |
| Fe3+                   | 0.009 | 0.003 | 0.003  | 0.010  | 0.005 | 0.003 | 0.008 | 0.000  | 0.000  | 0.000  | 0.000  |
| Ti                     | 0.000 | 0.000 | 0.000  | 0.000  | 0.000 | 0.000 | 0.000 | 0.000  | 0.000  | 0.000  | 0.000  |
| Z                      | 3.982 | 3.989 | 3.986  | 3.986  | 3.984 | 3.989 | 3.990 | 3.986  | 4.010  | 3.988  | 3.983  |
| Mg                     | 0.000 | 0.003 | 0.001  | 0.003  | 0.003 | 0.000 | 0.001 | 0.000  | 0.000  | 0.000  | 0.000  |
| Ca                     | 0.405 | 0.368 | 0.351  | 0.352  | 0.333 | 0.223 | 0.280 | 0.141  | 0.088  | 0.084  | 0.146  |
| Na                     | 0.655 | 0.665 | 0.703  | 0.693  | 0.720 | 0.817 | 0.775 | 0.905  | 0.895  | 0.979  | 0.930  |
| K                      | 0.013 | 0.012 | 0.007  | 0.013  | 0.016 | 0.012 | 0.009 | 0.015  | 0.011  | 0.016  | 0.011  |
| Ba                     | 0.002 | 0.000 | 0.001  | 0.001  | 0.000 | 0.002 | 0.001 | 0.000  | 0.000  | 0.001  | 0.001  |
| Or                     | 0.014 | 0.012 | 0.007  | 0.012  | 0.015 | 0.014 | 0.009 | 0.014  | 0.011  | 0.015  | 0.011  |
| Ab                     | 0.609 | 0.634 | 0.662  | 0.653  | 0.673 | 0.775 | 0.727 | 0.853  | 0.902  | 0.908  | 0.855  |
| An                     | 0.377 | 0.354 | 0.331  | 0.335  | 0.312 | 0.211 | 0.264 | 0.133  | 0.087  | 0.077  | 0.134  |

Table A2 - Chemical data on K-feldspars from Mt. Cer pluton.

| Rock type              | ME    | ME    | QMZD   | QMZD   | QMZD   | QMZD   | QMZD   | QMZD   | GDS   | TMG    | TMG   | TMG    |
|------------------------|-------|-------|--------|--------|--------|--------|--------|--------|-------|--------|-------|--------|
| Sample                 | 100x  | 103x  | 108    | 110    | 113    | 102    | 101    | 103    | 115   | 107    | 110   | 106    |
| rim/core               | -     | -     | -      | -      | -      | -      | -      | -      | -     | -      | -     | -      |
| SiO2 wt%               | 63.65 | 64.49 | 64.22  | 63.17  | 64.64  | 64.36  | 64.97  | 65.05  | 64.81 | 65.42  | 65.25 | 65.27  |
| TiO2                   | 0     | 0     | 0      | 0      | 0      | 0      | 0      | 0      | 0     | 0      | 0     | 0      |
| Al2O3                  | 18.64 | 18.66 | 19.06  | 18.96  | 18.9   | 18.78  | 18.45  | 18.75  | 18.76 | 18.87  | 18.89 | 18.67  |
| FeOt                   | 0.06  | 0.09  | 0.06   | 0.05   | 0.05   | 0      | 0.07   | 0.05   | 0.05  | 0.03   | 0     | 0.01   |
| MnO                    | 0     | 0     | 0      | 0      | 0      | 0      | 0      | 0      | 0     | 0      | 0     | 0      |
| MgO                    | 0.05  | 0.06  | 0.04   | 0.05   | 0.04   | 0.04   | 0.05   | 0.03   | 0.03  | 0      | 0     | 0.05   |
| CaO                    | 0     | 0     | 0      | 0      | 0      | 0      | 0      | 0      | 0     | 0.1    | 0     | 0      |
| Na2O                   | 1.35  | 1.12  | 1.39   | 1.19   | 1.25   | 1.3    | 1.28   | 1.1    | 0.88  | 1.01   | 1.46  | 1.49   |
| K2O                    | 14.27 | 14.98 | 14.47  | 14.08  | 14.78  | 14.53  | 14.79  | 15.09  | 14.65 | 14.82  | 14.3  | 14.78  |
| BaO                    | 1.32  | 0.61  | 1.12   | 2.66   | 1      | 1.35   | 0.65   | 0.89   | 0.41  | 0      | 0     | 0.02   |
| Total                  | 99.34 | 100   | 100.35 | 100.16 | 100.66 | 100.34 | 100.25 | 100.96 | 99.57 | 100.25 | 99.91 | 100.28 |
| Site allocations (8 O) |       |       |        |        |        |        |        |        |       |        |       |        |
| Si                     | 2.972 | 2.981 | 2.965  | 2.952  | 2.975  | 2.976  | 2.993  | 2.984  | 2.993 | 2.994  | 2.992 | 2.992  |
| Al                     | 1.026 | 1.017 | 1.037  | 1.044  | 1.025  | 1.023  | 1.002  | 1.014  | 1.021 | 1.018  | 1.021 | 1.009  |
| Fe3+                   | 0.002 | 0.003 | 0.002  | 0.002  | 0.002  | 0      | 0.003  | 0.002  | 0.002 | 0.001  | 0     | 0      |
| Ti                     | 0     | 0     | 0      | 0      | 0      | 0      | 0      | 0      | 0     | 0      | 0     | 0      |
| Z                      | 4     | 4.002 | 4.004  | 3.999  | 4.002  | 3.999  | 3.998  | 4      | 4.016 | 4.014  | 4.014 | 4.001  |
| Mg                     | 0.003 | 0.004 | 0.003  | 0.003  | 0.002  | 0.002  | 0.003  | 0.002  | 0.002 | 0      | 0     | 0.003  |
| Ca                     | 0     | 0     | 0      | 0      | 0      | 0      | 0      | 0      | 0     | 0.005  | 0     | 0      |
| Na                     | 0.122 | 0.1   | 0.125  | 0.108  | 0.111  | 0.117  | 0.114  | 0.098  | 0.079 | 0.09   | 0.13  | 0.132  |
| K                      | 0.85  | 0.884 | 0.852  | 0.84   | 0.868  | 0.857  | 0.869  | 0.883  | 0.863 | 0.866  | 0.837 | 0.864  |
| Ba                     | 0.024 | 0.011 | 0.02   | 0.049  | 0.018  | 0.024  | 0.012  | 0.016  | 0.008 | 0      | 0     | 0      |
| Or                     | 87.43 | 89.55 | 87.26  | 88.87  | 88.63  | 88.11  | 88.22  | 89.99  | 91.55 | 90.14  | 86.54 | 86.45  |
| Ab                     | 12.22 | 10.06 | 12.47  | 10.79  | 11.13  | 11.65  | 11.45  | 9.79   | 8.28  | 9.37   | 13.46 | 13.24  |
| An                     | 0.35  | 0.39  | 0.28   | 0.35   | 0.25   | 0.24   | 0.33   | 0.22   | 0.18  | 0.49   | 0     | 0.31   |

Table A3 - Chemical data on amphiboles from Mt. Cer pluton.

| Rock type       | ME     | ME     | ME     | ME     | ME     | ME     | ME     | ME     | ME     | ME     | ME     | ME     | ME     |
|-----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Sample          | 100x   | 100x   | 100x   | 100x   | 100x   | 100x   | 100x   | 100x   | 100x   | 100x   | 100x   | 100x   | 100x   |
| rim/core        | r      | r      | r      | r      | r      | c      | c      | c      | r      | r      | r      | r      | c      |
| point           | 1/3    | 1/1    | 4/1    | 1/5    | 3/4    | 1/2    | 1/6    | 4/2    | 1/1    | 1/2    | 2/1    | 5/5    | 1/3    |
| SiO2            | 48.59  | 47.58  | 47.29  | 47.09  | 44.34  | 47.86  | 47     | 48.31  | 47.81  | 48.18  | 45.98  | 46.76  | 47.02  |
| TiO2            | 0.00   | 0.00   | 0.56   | 0.00   | 1.18   | 0.00   | 0.00   | 0.79   | 0.32   | 0.45   | 0.74   | 0.76   | 0.77   |
| Al2O3           | 6.51   | 8.31   | 7.94   | 8.43   | 9.80   | 7.29   | 8.03   | 6.93   | 6.88   | 6.99   | 9.23   | 9.57   | 7.50   |
| FeO             | 13.33  | 13.84  | 13.83  | 13.97  | 14.79  | 13.74  | 13.92  | 13.41  | 15.02  | 15.20  | 14.28  | 15.32  | 14.87  |
| MnO             | 0.00   | 0.00   | 0.64   | 0.00   | 0.52   | 0.00   | 0.00   | 0.36   | 0.92   | 0.59   | 0.45   | 0.53   | 0.44   |
| MgO             | 14.67  | 13.69  | 13.91  | 13.72  | 12.40  | 14.34  | 13.94  | 14.33  | 13.25  | 13.43  | 12.83  | 12.20  | 13.08  |
| CaO             | 12.39  | 12.54  | 12.33  | 12.16  | 11.92  | 12.54  | 12.39  | 12.64  | 12.24  | 12.46  | 11.95  | 11.74  | 12.11  |
| Na2O            | 0.85   | 1.25   | 1.24   | 1.46   | 1.37   | 1.14   | 1.26   | 1.11   | 0.90   | 1.34   | 1.60   | 1.46   | 1.50   |
| K2O             | 0.57   | 0.76   | 0.69   | 0.84   | 0.97   | 0.69   | 0.67   | 0.62   | 0.00   | 0.00   | 0.00   | 0.00   | 0.00   |
| Total           | 98.96  | 100.03 | 100.50 | 99.73  | 99.32  | 99.66  | 99.26  | 100.58 | 99.39  | 100.71 | 99.11  | 100.42 | 99.33  |
| Si              | 7.107  | 6.922  | 6.837  | 6.866  | 6.545  | 6.966  | 6.874  | 6.982  | 7.006  | 6.994  | 6.726  | 6.750  | 6.888  |
| Ti              | 0.000  | 0.000  | 0.061  | 0.000  | 0.131  | 0.000  | 0.000  | 0.086  | 0.035  | 0.049  | 0.081  | 0.082  | 0.085  |
| Zr              | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  |
| Al              | 1.122  | 1.425  | 1.353  | 1.449  | 1.705  | 1.250  | 1.384  | 1.180  | 1.188  | 1.196  | 1.591  | 1.628  | 1.295  |
| V               | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  |
| Cr              | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  |
| Fe3+            | 0.316  | 0.328  | 0.556  | 0.452  | 0.598  | 0.457  | 0.503  | 0.345  | 0.474  | 0.342  | 0.593  | 0.667  | 0.536  |
| Fe2+            | 1.314  | 1.356  | 1.117  | 1.252  | 1.227  | 1.215  | 1.200  | 1.276  | 1.366  | 1.503  | 1.154  | 1.182  | 1.286  |
| Mn2+            | 0.000  | 0.000  | 0.078  | 0.000  | 0.065  | 0.000  | 0.000  | 0.044  | 0.114  | 0.073  | 0.056  | 0.065  | 0.055  |
| Mg              | 3.199  | 2.969  | 2.998  | 2.982  | 2.729  | 3.111  | 3.039  | 3.087  | 2.894  | 2.906  | 2.798  | 2.625  | 2.856  |
| Ca              | 1.942  | 1.955  | 1.910  | 1.900  | 1.885  | 1.955  | 1.942  | 1.957  | 1.922  | 1.938  | 1.873  | 1.816  | 1.899  |
| Na              | 0.241  | 0.353  | 0.348  | 0.413  | 0.392  | 0.322  | 0.357  | 0.311  | 0.256  | 0.377  | 0.454  | 0.409  | 0.426  |
| K               | 0.106  | 0.141  | 0.127  | 0.156  | 0.183  | 0.128  | 0.125  | 0.114  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  |
| Tot. Cat.       | 15.347 | 15.448 | 15.385 | 15.469 | 15.460 | 15.405 | 15.424 | 15.383 | 15.256 | 15.377 | 15.327 | 15.224 | 15.325 |
| Tetraedral Site |        |        |        |        |        |        |        |        |        |        |        |        |        |
| [Si(T)          | 7.107  | 6.922  | 6.837  | 6.866  | 6.545  | 6.966  | 6.874  | 6.982  | 7.006  | 6.994  | 6.726  | 6.750  | 6.888  |
| Al(T)           | 0.893  | 1.078  | 1.163  | 1.134  | 1.455  | 1.034  | 1.126  | 1.018  | 0.994  | 1.006  | 1.274  | 1.250  | 1.112  |
| Ti(T)           | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  |
| Total]T         | 8.000  | 8.000  | 8.000  | 8.000  | 8.000  | 8.000  | 8.000  | 8.000  | 8.000  | 8.000  | 8.000  | 8.000  | 8.000  |
| C site          |        |        |        |        |        |        |        |        |        |        |        |        |        |
| [Al(C)          | 0.229  | 0.347  | 0.190  | 0.314  | 0.250  | 0.216  | 0.258  | 0.162  | 0.194  | 0.189  | 0.318  | 0.378  | 0.183  |
| Ti(C)           | 0.000  | 0.000  | 0.061  | 0.000  | 0.131  | 0.000  | 0.000  | 0.086  | 0.035  | 0.049  | 0.081  | 0.082  | 0.085  |
| Fe3+(C)         | 0.316  | 0.328  | 0.556  | 0.452  | 0.598  | 0.457  | 0.503  | 0.345  | 0.474  | 0.342  | 0.593  | 0.667  | 0.536  |
| Mg(C)           | 3.199  | 2.969  | 2.998  | 2.982  | 2.729  | 3.111  | 3.039  | 3.087  | 2.894  | 2.906  | 2.798  | 2.625  | 2.856  |
| Fe2+(C)         | 1.256  | 1.356  | 1.117  | 1.252  | 1.227  | 1.215  | 1.200  | 1.276  | 1.366  | 1.503  | 1.154  | 1.182  | 1.286  |
| Mn2+(C)         | 0.000  | 0.000  | 0.078  | 0.000  | 0.065  | 0.000  | 0.000  | 0.044  | 0.036  | 0.010  | 0.056  | 0.065  | 0.055  |
| Total]C         | 5.000  | 5.000  | 5.000  | 5.000  | 5.000  | 5.000  | 5.000  | 5.000  | 5.000  | 5.000  | 5.000  | 5.000  | 5.000  |
| B site          |        |        |        |        |        |        |        |        |        |        |        |        |        |
| [Li(B)          | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  |
| Mn2+(B)         | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.078  | 0.062  | 0.000  | 0.000  | 0.000  |
| Fe2+(B)         | 0.058  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  |
| Mg(B)           | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  |
| Fe3+(B)         | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  |
| Ca(B)           | 1.942  | 1.955  | 1.910  | 1.900  | 1.885  | 1.955  | 1.942  | 1.957  | 1.922  | 1.938  | 1.873  | 1.816  | 1.899  |
| Na(B)           | 0.000  | 0.045  | 0.090  | 0.100  | 0.115  | 0.045  | 0.058  | 0.043  | 0.000  | 0.000  | 0.127  | 0.184  | 0.101  |
| Total]B         | 2.000  | 2.000  | 2.000  | 2.000  | 2.000  | 2.000  | 2.000  | 2.000  | 2.000  | 2.000  | 2.000  | 2.000  | 2.000  |
| A site          |        |        |        |        |        |        |        |        |        |        |        |        |        |
| [Na(A)          | 0.241  | 0.307  | 0.258  | 0.312  | 0.277  | 0.277  | 0.299  | 0.268  | 0.256  | 0.377  | 0.327  | 0.224  | 0.325  |
| Ba(A)           | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  |
| Sr(A)           | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  |
| Ca(A)           | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  |
| K(A)            | 0.106  | 0.141  | 0.127  | 0.156  | 0.183  | 0.128  | 0.125  | 0.114  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  |
| Total]A         | 0.347  | 0.448  | 0.385  | 0.469  | 0.460  | 0.405  | 0.424  | 0.383  | 0.256  | 0.377  | 0.327  | 0.224  | 0.325  |
| OH              | 1.953  | 1.943  | 1.930  | 1.947  | 1.971  | 1.943  | 1.953  | 1.930  | 1.957  | 1.938  | 1.953  | 1.927  | 1.956  |
| Total           | 1.953  | 1.943  | 1.930  | 1.947  | 1.971  | 1.943  | 1.953  | 1.930  | 1.957  | 1.938  | 1.953  | 1.927  | 1.956  |
| H2O(c)          | 2.050  | 2.061  | 2.074  | 2.056  | 2.031  | 2.060  | 2.050  | 2.075  | 2.046  | 2.066  | 2.050  | 2.077  | 2.047  |
| Mg/(Mg+Fe2)     | 0.709  | 0.686  | 0.729  | 0.704  | 0.690  | 0.719  | 0.717  | 0.708  | 0.679  | 0.659  | 0.708  | 0.690  | 0.690  |
| Groups          | Calcic | Calcic | Calcic | Calcic | Calcic | Calcic | Calcic | Calcic | Calcic | Calcic | Calcic | Calcic | Calcic |
| Names           | Mq-Ho. | Mq-Ho. | Mq-Ho. | Mq-Ho. | Mq-Ho. | Mq-Ho. | Mq-Ho. | Mq-Ho. | Mq-Ho. | Mq-Ho. | Mq-Ho. | Mq-Ho. | Mq-Ho. |

Table A3 (cont) - Chemical data on amphiboles from Mt. Cer pluton.

| Rock type       | ME     | ME     | ME     | QMZD   | QMZD   | QMZD   | QMZD   | QMZD   | QMZD   | QMZD   | QMZD   | QMZD   | QMZD   |
|-----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Sample          | 100x   | 100x   | 100x   | 108    | 108    | 108    | 108    | 108    | 108    | 108    | 113    | 113    | 113    |
| rim/core        | c      | c      | c      | r      | r      | r      | c      | c      | c      | r      | r      | r      | c      |
| point           | 1/4    | 2/2    | 5/6    | 1/4    | 1/6    | 3/7    | 1/5    | 1/7    | 3/8    | 6/1    | 1/5    | 2/1    | 2/2    |
| SiO2            | 46.83  | 46.48  | 46.07  | 42.39  | 42.01  | 44.04  | 42.83  | 42.37  | 44.04  | 42.95  | 41.77  | 42.79  | 43.91  |
| TiO2            | 0.81   | 0.66   | 0.93   | 1.01   | 0.77   | 0.81   | 1.16   | 0.94   | 0.91   | 0.85   | 0.70   | 0.85   | 1.12   |
| Al2O3           | 7.68   | 9.27   | 9.15   | 10.54  | 11.28  | 10.91  | 9.89   | 11.40  | 10.59  | 10.49  | 11.51  | 10.80  | 10.19  |
| FeO             | 14.17  | 14.55  | 14.82  | 18.85  | 18.83  | 17.90  | 18.00  | 19.37  | 17.60  | 18.58  | 18.68  | 19.22  | 18.86  |
| MnO             | 0.51   | 0.34   | 0.64   | 0.68   | 0.41   | 0.55   | 0.66   | 0.61   | 0.61   | 0.50   | 0.70   | 0.68   | 0.69   |
| MgO             | 13.13  | 12.83  | 12.52  | 9.73   | 9.60   | 10.62  | 10.07  | 9.49   | 10.90  | 10.02  | 9.81   | 9.62   | 10.09  |
| CaO             | 12.07  | 11.84  | 11.43  | 11.98  | 11.92  | 12.17  | 12.18  | 12.30  | 11.91  | 11.74  | 11.88  | 12.18  | 12.14  |
| Na2O            | 1.24   | 1.36   | 1.47   | 1.61   | 1.30   | 1.51   | 1.65   | 1.57   | 1.57   | 1.66   | 1.53   | 1.65   | 1.53   |
| K2O             | 0.00   | 0.00   | 0.00   | 0.00   | 0.00   | 0.00   | 0.00   | 0.00   | 0.00   | 1.00   | 0.00   | 0.00   | 0.00   |
| Total           | 98.46  | 99.37  | 99.06  | 98.77  | 98.10  | 100.55 | 98.42  | 100.06 | 100.16 | 99.79  | 98.57  | 99.79  | 100.55 |
| Si              | 6.936  | 6.824  | 6.815  | 6.406  | 6.361  | 6.488  | 6.487  | 6.320  | 6.512  | 6.429  | 6.301  | 6.406  | 6.510  |
| Ti              | 0.090  | 0.073  | 0.103  | 0.115  | 0.088  | 0.090  | 0.132  | 0.105  | 0.101  | 0.096  | 0.079  | 0.096  | 0.125  |
| Zr              | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  |
| Al              | 1.341  | 1.604  | 1.595  | 1.877  | 2.013  | 1.894  | 1.765  | 2.004  | 1.845  | 1.851  | 2.046  | 1.906  | 1.781  |
| V               | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  |
| Cr              | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  |
| Fe3+            | 0.251  | 0.215  | 0.146  | 0.609  | 0.707  | 0.518  | 0.511  | 0.690  | 0.479  | 0.662  | 0.744  | 0.613  | 0.509  |
| Fe2+            | 1.504  | 1.571  | 1.687  | 1.774  | 1.677  | 1.687  | 1.769  | 1.727  | 1.697  | 1.663  | 1.612  | 1.794  | 1.830  |
| Mn2+            | 0.064  | 0.042  | 0.080  | 0.087  | 0.053  | 0.069  | 0.085  | 0.077  | 0.076  | 0.063  | 0.089  | 0.086  | 0.087  |
| Mg              | 2.899  | 2.808  | 2.761  | 2.192  | 2.167  | 2.332  | 2.274  | 2.110  | 2.403  | 2.236  | 2.206  | 2.147  | 2.230  |
| Ca              | 1.915  | 1.862  | 1.812  | 1.940  | 1.934  | 1.921  | 1.977  | 1.966  | 1.887  | 1.883  | 1.920  | 1.954  | 1.929  |
| Na              | 0.356  | 0.387  | 0.422  | 0.472  | 0.382  | 0.431  | 0.485  | 0.454  | 0.450  | 0.482  | 0.448  | 0.479  | 0.440  |
| K               | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.191  | 0.000  | 0.000  | 0.000  |
| Tot. Cat.       | 15.356 | 15.387 | 15.422 | 15.472 | 15.382 | 15.431 | 15.485 | 15.454 | 15.450 | 15.555 | 15.448 | 15.479 | 15.440 |
| Tetraedral Site |        |        |        |        |        |        |        |        |        |        |        |        |        |
| [Si(T)          | 6.936  | 6.824  | 6.815  | 6.406  | 6.361  | 6.488  | 6.487  | 6.320  | 6.512  | 6.429  | 6.301  | 6.406  | 6.510  |
| Al(T)           | 1.064  | 1.176  | 1.185  | 1.594  | 1.639  | 1.512  | 1.513  | 1.680  | 1.488  | 1.571  | 1.699  | 1.594  | 1.490  |
| Ti(T)           | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  |
| Total]T         | 8.000  | 8.000  | 8.000  | 8.000  | 8.000  | 8.000  | 8.000  | 8.000  | 8.000  | 8.000  | 8.000  | 8.000  | 8.000  |
| C site          |        |        |        |        |        |        |        |        |        |        |        |        |        |
| [Al(C)          | 0.276  | 0.428  | 0.410  | 0.284  | 0.374  | 0.383  | 0.253  | 0.325  | 0.357  | 0.279  | 0.348  | 0.311  | 0.291  |
| Ti(C)           | 0.090  | 0.073  | 0.103  | 0.115  | 0.088  | 0.090  | 0.132  | 0.105  | 0.101  | 0.096  | 0.079  | 0.096  | 0.125  |
| Fe3+(C)         | 0.251  | 0.215  | 0.146  | 0.609  | 0.707  | 0.518  | 0.511  | 0.690  | 0.479  | 0.662  | 0.744  | 0.613  | 0.509  |
| Mg(C)           | 2.899  | 2.808  | 2.761  | 2.192  | 2.167  | 2.332  | 2.274  | 2.110  | 2.403  | 2.236  | 2.206  | 2.147  | 2.230  |
| Fe2+(C)         | 1.483  | 1.476  | 1.579  | 1.774  | 1.664  | 1.677  | 1.769  | 1.727  | 1.660  | 1.663  | 1.612  | 1.794  | 1.830  |
| Mn2+(C)         | 0.000  | 0.000  | 0.000  | 0.027  | 0.000  | 0.000  | 0.061  | 0.043  | 0.000  | 0.063  | 0.010  | 0.040  | 0.015  |
| Total]C         | 5.000  | 5.000  | 5.000  | 5.000  | 5.000  | 5.000  | 5.000  | 5.000  | 5.000  | 5.000  | 5.000  | 5.000  | 5.000  |
| B site          |        |        |        |        |        |        |        |        |        |        |        |        |        |
| [Li(B)          | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  |
| Mn2+(B)         | 0.064  | 0.042  | 0.080  | 0.060  | 0.053  | 0.069  | 0.023  | 0.034  | 0.076  | 0.000  | 0.080  | 0.046  | 0.071  |
| Fe2+(B)         | 0.021  | 0.095  | 0.108  | 0.000  | 0.014  | 0.010  | 0.000  | 0.000  | 0.037  | 0.000  | 0.000  | 0.000  | 0.000  |
| Mg(B)           | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  |
| Fe3+(B)         | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  |
| Ca(B)           | 1.915  | 1.862  | 1.812  | 1.940  | 1.934  | 1.921  | 1.977  | 1.966  | 1.887  | 1.883  | 1.920  | 1.954  | 1.929  |
| Na(B)           | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.117  | 0.000  | 0.000  | 0.000  |
| Total]B         | 2.000  | 2.000  | 2.000  | 2.000  | 2.000  | 2.000  | 2.000  | 2.000  | 2.000  | 2.000  | 2.000  | 2.000  | 2.000  |
| A site          |        |        |        |        |        |        |        |        |        |        |        |        |        |
| [Na(A)          | 0.356  | 0.387  | 0.422  | 0.472  | 0.382  | 0.431  | 0.485  | 0.454  | 0.450  | 0.364  | 0.448  | 0.479  | 0.440  |
| Ba(A)           | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  |
| Sr(A)           | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  |
| Ca(A)           | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  |
| K(A)            | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.191  | 0.000  | 0.000  | 0.000  |
| Total]A         | 0.356  | 0.387  | 0.422  | 0.472  | 0.382  | 0.431  | 0.485  | 0.454  | 0.450  | 0.555  | 0.448  | 0.479  | 0.440  |
| OH              | 1.978  | 1.960  | 1.975  | 2.000  | 2.000  | 1.967  | 2.000  | 1.992  | 1.974  | 1.999  | 2.000  | 1.999  | 1.980  |
| Total           | 1.978  | 1.960  | 1.975  | 2.000  | 2.000  | 1.967  | 2.000  | 1.992  | 1.974  | 1.999  | 2.000  | 1.999  | 1.980  |
| H2O(c)          | 2.024  | 2.042  | 2.027  | 1.984  | 1.980  | 2.035  | 1.980  | 2.010  | 2.028  | 2.003  | 1.987  | 2.003  | 2.022  |
| Mg/(Mg+Fe2)     | 0.658  | 0.641  | 0.621  | 0.553  | 0.564  | 0.580  | 0.562  | 0.550  | 0.586  | 0.573  | 0.578  | 0.545  | 0.549  |
| Groups          | Calcic | Calcic | Calcic | Calcic | Calcic | Calcic | Calcic | Calcic | Calcic | Calcic | Calcic | Calcic | Calcic |
| Names           | Mg-Ho. | Mg-Ho. | Mg-Ho. | Tsch.  | Tsch.  | Tsch.  | Tsch.  | Tsch.  | Mg-Ho. | Mg-Ho. | Tsch.  | Tsch.  | Mg-Ho. |

Table A3 (cont) - Chemical data on amphiboles from Mt. Cer pluton.

| Rock type       | QmZD   | QmZD   | QmZD   | QmZD   | QmZD   | QmZD   | QmZD   | QmZD   | QmZD   | QmZD   | QmZD   | QmZD   | QmZD   |
|-----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Sample          | 113    | 113    | 100    | 100    | 100    | 100    | 101    | 101    | 101    | 101    | 101    | 101    | 101    |
| rim/core        | c      | c      | r      | r      | c      | c      | r      | r      | r      | c      | c      | c      | c      |
| point           | 1/6    | 6/2    | 3/7    | 3/9    | 3/8    | 3/10   | 2/5    | 4/5    | 5/1    | 4/6    | 5/2    | 2/6    | 3/5    |
| SiO2            | 42.45  | 43.87  | 42.84  | 41.81  | 43.11  | 44.04  | 43.05  | 43.44  | 43.4   | 45.19  | 43.59  | 42.83  | 43.55  |
| TiO2            | 0.62   | 0.80   | 0.84   | 0.99   | 1.00   | 0.98   | 0.61   | 0.62   | 0.66   | 0.64   | 0.81   | 0.84   | 0.68   |
| Al2O3           | 11.86  | 9.40   | 10.66  | 10.54  | 10.23  | 9.10   | 10.40  | 10.39  | 10.01  | 9.60   | 10.72  | 10.37  | 10.11  |
| FeO             | 18.87  | 17.82  | 19.06  | 19.09  | 19.08  | 18.06  | 18.46  | 18.90  | 18.80  | 18.32  | 19.58  | 18.07  | 19.00  |
| MnO             | 0.65   | 0.55   | 0.56   | 0.83   | 0.72   | 0.61   | 0.53   | 0.50   | 0.47   | 0.53   | 0.37   | 0.57   | 0.66   |
| MgO             | 9.37   | 10.18  | 10.12  | 9.57   | 9.76   | 10.36  | 9.96   | 9.65   | 9.86   | 10.69  | 9.52   | 9.87   | 9.99   |
| CaO             | 12.09  | 11.72  | 12.09  | 12.22  | 12.25  | 11.88  | 11.98  | 12.02  | 12.19  | 12.26  | 12.38  | 12.21  | 11.75  |
| Na2O            | 1.89   | 1.48   | 1.80   | 1.62   | 1.55   | 1.32   | 1.55   | 1.38   | 1.53   | 1.48   | 1.74   | 1.76   | 1.6    |
| K2O             | 0.00   | 0.87   | 1.12   | 1.11   | 1.21   | 0.93   | 1.04   | 0.00   | 0.00   | 0.00   | 0.00   | 1.15   | 1.06   |
| Total           | 99.80  | 98.68  | 101.11 | 99.76  | 100.92 | 99.28  | 99.58  | 98.89  | 98.91  | 100.75 | 100.73 | 99.65  | 100.42 |
| Si              | 6.358  | 6.624  | 6.362  | 6.327  | 6.439  | 6.614  | 6.470  | 6.539  | 6.538  | 6.657  | 6.475  | 6.475  | 6.484  |
| Ti              | 0.070  | 0.091  | 0.094  | 0.113  | 0.112  | 0.111  | 0.069  | 0.070  | 0.075  | 0.071  | 0.090  | 0.095  | 0.076  |
| Zr              | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  |
| Al              | 2.094  | 1.673  | 1.866  | 1.880  | 1.801  | 1.611  | 1.842  | 1.843  | 1.777  | 1.667  | 1.877  | 1.848  | 1.774  |
| V               | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  |
| Cr              | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  |
| Fe3+            | 0.502  | 0.504  | 0.644  | 0.590  | 0.496  | 0.555  | 0.571  | 0.535  | 0.551  | 0.455  | 0.491  | 0.318  | 0.692  |
| Fe2+            | 1.862  | 1.746  | 1.723  | 1.826  | 1.887  | 1.713  | 1.749  | 1.844  | 1.818  | 1.802  | 1.942  | 1.966  | 1.674  |
| Mn2+            | 0.082  | 0.070  | 0.070  | 0.106  | 0.091  | 0.078  | 0.067  | 0.064  | 0.060  | 0.066  | 0.047  | 0.073  | 0.083  |
| Mg              | 2.092  | 2.292  | 2.241  | 2.159  | 2.173  | 2.319  | 2.231  | 2.166  | 2.214  | 2.348  | 2.108  | 2.224  | 2.217  |
| Ca              | 1.940  | 1.896  | 1.924  | 1.981  | 1.960  | 1.911  | 1.929  | 1.939  | 1.967  | 1.935  | 1.970  | 1.978  | 1.874  |
| Na              | 0.549  | 0.433  | 0.518  | 0.475  | 0.449  | 0.384  | 0.452  | 0.403  | 0.447  | 0.423  | 0.501  | 0.516  | 0.465  |
| K               | 0.000  | 0.168  | 0.212  | 0.214  | 0.231  | 0.178  | 0.199  | 0.000  | 0.000  | 0.000  | 0.000  | 0.222  | 0.201  |
| Tot. Cat.       | 15.549 | 15.497 | 15.654 | 15.671 | 15.640 | 15.474 | 15.580 | 15.403 | 15.447 | 15.423 | 15.501 | 15.715 | 15.540 |
| Tetraedral Site |        |        |        |        |        |        |        |        |        |        |        |        |        |
| [Si(T)          | 6.358  | 6.624  | 6.362  | 6.327  | 6.439  | 6.614  | 6.470  | 6.539  | 6.538  | 6.657  | 6.475  | 6.475  | 6.484  |
| Al(T)           | 1.642  | 1.376  | 1.638  | 1.673  | 1.561  | 1.386  | 1.530  | 1.461  | 1.462  | 1.343  | 1.525  | 1.525  | 1.516  |
| Ti(T)           | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  |
| Total]T         | 8.000  | 8.000  | 8.000  | 8.000  | 8.000  | 8.000  | 8.000  | 8.000  | 8.000  | 8.000  | 8.000  | 8.000  | 8.000  |
| C site          |        |        |        |        |        |        |        |        |        |        |        |        |        |
| [Al(C)          | 0.452  | 0.297  | 0.228  | 0.206  | 0.240  | 0.224  | 0.312  | 0.383  | 0.315  | 0.324  | 0.352  | 0.323  | 0.258  |
| Ti(C)           | 0.070  | 0.091  | 0.094  | 0.113  | 0.112  | 0.111  | 0.069  | 0.070  | 0.075  | 0.071  | 0.090  | 0.095  | 0.076  |
| Fe3+(C)         | 0.502  | 0.504  | 0.644  | 0.590  | 0.496  | 0.555  | 0.571  | 0.535  | 0.551  | 0.455  | 0.491  | 0.318  | 0.692  |
| Mg(C)           | 2.092  | 2.292  | 2.241  | 2.159  | 2.173  | 2.319  | 2.231  | 2.166  | 2.214  | 2.348  | 2.108  | 2.224  | 2.217  |
| Fe2+(C)         | 1.862  | 1.746  | 1.723  | 1.826  | 1.887  | 1.713  | 1.749  | 1.844  | 1.818  | 1.802  | 1.942  | 1.966  | 1.674  |
| Mn2+(C)         | 0.023  | 0.070  | 0.070  | 0.106  | 0.091  | 0.078  | 0.067  | 0.002  | 0.027  | 0.001  | 0.017  | 0.073  | 0.083  |
| Total]C         | 5.000  | 5.000  | 5.000  | 5.000  | 5.000  | 5.000  | 5.000  | 5.000  | 5.000  | 5.000  | 5.000  | 5.000  | 5.000  |
| B site          |        |        |        |        |        |        |        |        |        |        |        |        |        |
| [Li(B)          | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  |
| Mn2+(B)         | 0.060  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.061  | 0.033  | 0.065  | 0.030  | 0.000  | 0.000  |
| Fe2+(B)         | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  |
| Mg(B)           | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  |
| Fe3+(B)         | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  |
| Ca(B)           | 1.940  | 1.896  | 1.924  | 1.981  | 1.960  | 1.911  | 1.929  | 1.939  | 1.967  | 1.935  | 1.970  | 1.978  | 1.874  |
| Na(B)           | 0.000  | 0.104  | 0.076  | 0.019  | 0.040  | 0.089  | 0.071  | 0.000  | 0.000  | 0.000  | 0.000  | 0.022  | 0.126  |
| Total]B         | 2.000  | 2.000  | 2.000  | 2.000  | 2.000  | 2.000  | 2.000  | 2.000  | 2.000  | 2.000  | 2.000  | 2.000  | 2.000  |
| A site          |        |        |        |        |        |        |        |        |        |        |        |        |        |
| [Na(A)          | 0.549  | 0.329  | 0.442  | 0.456  | 0.409  | 0.296  | 0.381  | 0.403  | 0.447  | 0.423  | 0.501  | 0.494  | 0.339  |
| Ba(A)           | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  |
| Sr(A)           | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  |
| Ca(A)           | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  |
| K(A)            | 0.000  | 0.168  | 0.212  | 0.214  | 0.231  | 0.178  | 0.199  | 0.000  | 0.000  | 0.000  | 0.000  | 0.222  | 0.201  |
| Total]A         | 0.549  | 0.497  | 0.654  | 0.671  | 0.640  | 0.474  | 0.580  | 0.403  | 0.447  | 0.423  | 0.501  | 0.715  | 0.540  |
| OH              | 2.000  | 2.000  | 1.983  | 2.000  | 1.994  | 2.000  | 2.000  | 2.000  | 2.000  | 1.967  | 1.983  | 2.000  | 1.988  |
| Total           | 2.000  | 2.000  | 1.983  | 2.000  | 1.994  | 2.000  | 2.000  | 2.000  | 2.000  | 1.967  | 1.983  | 2.000  | 1.988  |
| H2O(c)          | 2.002  | 1.986  | 2.019  | 1.981  | 2.007  | 1.997  | 1.995  | 1.992  | 1.990  | 2.035  | 2.018  | 1.983  | 2.014  |
| Mg/(Mg+Fe2)     | 0.529  | 0.568  | 0.565  | 0.542  | 0.535  | 0.575  | 0.561  | 0.540  | 0.549  | 0.566  | 0.521  | 0.531  | 0.570  |
| Groups          | Calcic | Calcic | Calcic | Calcic | Calcic | Calcic | Calcic | Calcic | Calcic | Calcic | Calcic | Calcic | Calcic |
| Names           | Mq-Ho. | Mq-Ho. | Mq-Ho. | Mq-Ho. | Mq-Ho. | Mq-Ho. | Mq-Ho. | Mq-Ho. | Mq-Ho. | Mq-Ho. | Mq-Ho. | Parq.  | Mq-Ho. |

Table A3 (cont) - Chemical data on amphiboles from Mt. Cer pluton.

| Rock type<br>Sample<br>rim/core<br>point | QMZD   | QMZD   | QMZD   | QMZD   | QMZD   | QMZD   | Amphiboles from<br>enclave reported in<br>Knežević, Karamata &<br>Cvetković (1994) |        |        |
|------------------------------------------|--------|--------|--------|--------|--------|--------|------------------------------------------------------------------------------------|--------|--------|
|                                          | 102    | 102    | 102    | 102    | 102    | 102    |                                                                                    |        |        |
|                                          | r      | r      | r      | c      | c      | c      |                                                                                    |        |        |
|                                          | 1/3    | 2/1    | 2/3    | 1/4    | 2/2    | 2/4    |                                                                                    |        |        |
| SiO2                                     | 44.12  | 44.16  | 44.94  | 44.78  | 44.84  | 44.86  | 48.93                                                                              | 49.08  | 49.15  |
| TiO2                                     | 1.14   | 0.62   | 1.32   | 1.04   | 0.61   | 0.93   | 0.36                                                                               | 0.48   | 0.47   |
| Al2O3                                    | 9.26   | 9.27   | 8.39   | 8.37   | 8.47   | 9.18   | 6.08                                                                               | 6.26   | 6.28   |
| FeO                                      | 19.32  | 19.09  | 18.24  | 18.27  | 18.57  | 18.96  | 13.53                                                                              | 13.01  | 13.11  |
| MnO                                      | 0.47   | 0.75   | 0.53   | 0.62   | 0.76   | 0.72   | 0.58                                                                               | 0.58   | 0.53   |
| MgO                                      | 9.84   | 10.01  | 10.53  | 10.71  | 10.09  | 10.47  | 14.43                                                                              | 14.77  | 14.60  |
| CaO                                      | 12.08  | 11.97  | 12.02  | 12.14  | 12.07  | 11.91  | 12.37                                                                              | 12.37  | 12.33  |
| Na2O                                     | 1.53   | 1.41   | 1.49   | 1.39   | 1.17   | 1.32   | 0.82                                                                               | 0.84   | 0.9    |
| K2O                                      | 0.00   | 0.00   | 0.00   | 0.00   | 0.00   | 0.00   | 0.47                                                                               | 0.58   | 0.57   |
| Total                                    | 99.76  | 99.28  | 99.46  | 99.32  | 98.57  | 100.37 | 99.63                                                                              | 100.04 | 100.03 |
| Si                                       | 6.614  | 6.631  | 6.734  | 6.703  | 6.765  | 6.648  | 7.130                                                                              | 7.116  | 7.093  |
| Ti                                       | 0.129  | 0.070  | 0.149  | 0.117  | 0.069  | 0.104  | 0.039                                                                              | 0.052  | 0.051  |
| Zr                                       | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000                                                                              | 0.000  | 0.000  |
| Al                                       | 1.636  | 1.640  | 1.482  | 1.477  | 1.506  | 1.603  | 1.044                                                                              | 1.070  | 1.068  |
| V                                        | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000                                                                              | 0.000  | 0.000  |
| Cr                                       | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000                                                                              | 0.000  | 0.000  |
| Fe3+                                     | 0.434  | 0.548  | 0.319  | 0.479  | 0.484  | 0.513  | 0.298                                                                              | 0.251  | 0.472  |
| Fe2+                                     | 1.988  | 1.849  | 1.967  | 1.808  | 1.859  | 1.837  | 1.351                                                                              | 1.326  | 1.111  |
| Mn2+                                     | 0.060  | 0.095  | 0.067  | 0.079  | 0.097  | 0.090  | 0.072                                                                              | 0.071  | 0.065  |
| Mg                                       | 2.199  | 2.241  | 2.352  | 2.390  | 2.269  | 2.313  | 3.135                                                                              | 3.192  | 3.141  |
| Ca                                       | 1.940  | 1.926  | 1.930  | 1.947  | 1.951  | 1.891  | 1.931                                                                              | 1.921  | 1.906  |
| Na                                       | 0.445  | 0.410  | 0.433  | 0.403  | 0.342  | 0.379  | 0.232                                                                              | 0.236  | 0.255  |
| K                                        | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.087                                                                              | 0.107  | 0.105  |
| Tot. Cat.                                | 15.445 | 15.410 | 15.433 | 15.403 | 15.342 | 15.379 | 15.319                                                                             | 15.343 | 15.266 |
| Tetraedral Site                          |        |        |        |        |        |        |                                                                                    |        |        |
| [Si(T)                                   | 6.614  | 6.631  | 6.734  | 6.703  | 6.765  | 6.648  | 7.130                                                                              | 7.116  | 7.093  |
| Al(T)                                    | 1.386  | 1.369  | 1.266  | 1.297  | 1.235  | 1.352  | 0.870                                                                              | 0.884  | 0.907  |
| Ti(T)                                    | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000                                                                              | 0.000  | 0.000  |
| Total]T                                  | 8.000  | 8.000  | 8.000  | 8.000  | 8.000  | 8.000  | 8.000                                                                              | 8.000  | 8.000  |
| C site                                   |        |        |        |        |        |        |                                                                                    |        |        |
| [Al(C)                                   | 0.250  | 0.271  | 0.216  | 0.180  | 0.271  | 0.252  | 0.174                                                                              | 0.185  | 0.161  |
| Ti(C)                                    | 0.129  | 0.070  | 0.149  | 0.117  | 0.069  | 0.104  | 0.039                                                                              | 0.052  | 0.051  |
| Fe3+(C)                                  | 0.434  | 0.548  | 0.319  | 0.479  | 0.484  | 0.513  | 0.298                                                                              | 0.251  | 0.472  |
| Mg(C)                                    | 2.199  | 2.241  | 2.352  | 2.390  | 2.269  | 2.313  | 3.135                                                                              | 3.192  | 3.141  |
| Fe2+(C)                                  | 1.988  | 1.849  | 1.964  | 1.808  | 1.859  | 1.818  | 1.351                                                                              | 1.319  | 1.111  |
| Mn2+(C)                                  | 0.000  | 0.021  | 0.000  | 0.026  | 0.048  | 0.000  | 0.003                                                                              | 0.000  | 0.065  |
| Total]C                                  | 5.000  | 5.000  | 5.000  | 5.000  | 5.000  | 5.000  | 5.000                                                                              | 5.000  | 5.000  |
| B site                                   |        |        |        |        |        |        |                                                                                    |        |        |
| [Li(B)                                   | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000                                                                              | 0.000  | 0.000  |
| Mn2+(B)                                  | 0.060  | 0.074  | 0.067  | 0.053  | 0.049  | 0.090  | 0.069                                                                              | 0.071  | 0.000  |
| Fe2+(B)                                  | 0.000  | 0.000  | 0.003  | 0.000  | 0.000  | 0.018  | 0.000                                                                              | 0.007  | 0.000  |
| Mg(B)                                    | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000                                                                              | 0.000  | 0.000  |
| Fe3+(B)                                  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000                                                                              | 0.000  | 0.000  |
| Ca(B)                                    | 1.940  | 1.926  | 1.930  | 1.947  | 1.951  | 1.891  | 1.931                                                                              | 1.921  | 1.906  |
| Na(B)                                    | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000                                                                              | 0.000  | 0.094  |
| Total]B                                  | 2.000  | 2.000  | 2.000  | 2.000  | 2.000  | 2.000  | 2.000                                                                              | 2.000  | 2.000  |
| A site                                   |        |        |        |        |        |        |                                                                                    |        |        |
| [Na(A)                                   | 0.445  | 0.410  | 0.433  | 0.403  | 0.342  | 0.379  | 0.232                                                                              | 0.236  | 0.161  |
| Ba(A)                                    | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000                                                                              | 0.000  | 0.000  |
| Sr(A)                                    | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000                                                                              | 0.000  | 0.000  |
| Ca(A)                                    | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000                                                                              | 0.000  | 0.000  |
| K(A)                                     | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.087                                                                              | 0.107  | 0.105  |
| Total]A                                  | 0.445  | 0.410  | 0.433  | 0.403  | 0.342  | 0.379  | 0.319                                                                              | 0.343  | 0.266  |
| OH                                       | 2.000  | 2.000  | 2.000  | 1.999  | 2.000  | 1.979  | 1.946                                                                              | 1.936  | 1.927  |
| Total                                    | 2.000  | 2.000  | 2.000  | 1.999  | 2.000  | 1.979  | 1.946                                                                              | 1.936  | 1.927  |
| H2O(c)                                   | 2.000  | 1.997  | 2.001  | 2.003  | 1.987  | 2.023  | 2.058                                                                              | 2.068  | 2.078  |
| Mg/(Mg+Fe2)                              | 0.525  | 0.548  | 0.545  | 0.569  | 0.550  | 0.557  | 0.699                                                                              | 0.706  | 0.739  |
| Groups                                   | Calcic | Calcic | Calcic | Calcic | Calcic | Calcic | Calcic                                                                             | Calcic | Calcic |
| Names                                    | Mg-Ho. | Mg-Ho. | Mg-Ho. | Mg-Ho. | Mg-Ho. | Mg-Ho. | Mg-Ho.                                                                             | Mg-Ho. | Mg-Ho. |

Table A4 - Chemical data on biotites from Mt. Cer pluton.

|                         | Rock type | ME    | ME    | ME    | ME    | ME    | ME    | ME    | ME    | ME    | ME    | QMZD  | QMZD  | QMZD  | QMZD  |
|-------------------------|-----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|                         | Sample    | 100x  | 100x  | 100x  | 100x  | 100x  | 100x  | 103x  | 103x  | 103x  | 103x  | 100   | 100   | 100   | 100   |
|                         | Point     | 1/7   | 1/8   | 1/9   | 1/10  | 4/5   | 4/6   | 1/6   | 4/3   | 4/4   | 4/5   | 1/6   | 1/7   | 3/12  | 3/11  |
| SiO2                    |           | 37.85 | 36.78 | 37.96 | 38.08 | 37.86 | 38.05 | 37.16 | 38.49 | 38.40 | 38.10 | 35.85 | 35.60 | 36.27 | 36.91 |
| TiO2                    |           | 2.59  | 2.77  | 2.29  | 2.62  | 2.98  | 2.82  | 2.79  | 2.59  | 2.51  | 2.11  | 3.00  | 2.92  | 2.54  | 2.68  |
| Al2O3                   |           | 15.21 | 14.86 | 15.31 | 15.65 | 15.40 | 15.22 | 14.50 | 15.00 | 15.60 | 15.20 | 15.25 | 14.98 | 15.10 | 14.83 |
| FeO                     |           | 15.55 | 15.02 | 16.94 | 15.60 | 15.91 | 15.75 | 17.29 | 17.20 | 17.04 | 16.95 | 20.22 | 20.00 | 19.95 | 20.06 |
| MnO                     |           | 0.42  | 0.38  | 0.28  | 0.32  | 0.45  | 0.51  | 0.53  | 0.35  | 0.30  | 0.47  | 0.34  | 0.47  | 0.45  | 0.49  |
| MgO                     |           | 14.12 | 13.74 | 14.01 | 14.44 | 14.72 | 14.22 | 13.37 | 13.81 | 14.43 | 14.22 | 11.38 | 11.61 | 11.54 | 11.15 |
| CaO                     |           | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  |
| Na2O                    |           | 0.31  | 0.22  | 0.16  | 0.35  | 0.36  | 0.40  | 0.30  | 0.39  | 0.27  | 0.37  | 0.64  | 0.65  | 0.25  | 0.45  |
| K2O                     |           | 8.80  | 8.95  | 9.03  | 9.09  | 9.09  | 9.01  | 9.02  | 8.73  | 8.74  | 8.55  | 8.75  | 8.93  | 9.03  | 9.05  |
| SUM                     |           | 94.85 | 92.72 | 95.98 | 96.15 | 96.77 | 95.98 | 94.96 | 96.56 | 97.29 | 95.97 | 95.43 | 95.16 | 95.13 | 95.62 |
| Site allocations (22 O) |           |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Si                      |           | 5.672 | 5.647 | 5.657 | 5.632 | 5.582 | 5.649 | 5.637 | 5.698 | 5.632 | 5.670 | 5.495 | 5.483 | 5.567 | 5.636 |
| Al IV                   |           | 2.328 | 2.353 | 2.343 | 2.368 | 2.418 | 2.351 | 2.363 | 2.302 | 2.368 | 2.330 | 2.505 | 2.517 | 2.433 | 2.364 |
| Z                       |           | 8.000 | 8.000 | 8.000 | 8.000 | 8.000 | 8.000 | 8.000 | 8.000 | 8.000 | 8.000 | 8.000 | 8.000 | 8.000 | 8.000 |
| Al VI                   |           | 0.358 | 0.336 | 0.346 | 0.360 | 0.259 | 0.312 | 0.229 | 0.315 | 0.328 | 0.336 | 0.250 | 0.203 | 0.299 | 0.304 |
| Ti                      |           | 0.292 | 0.320 | 0.257 | 0.291 | 0.330 | 0.315 | 0.318 | 0.288 | 0.277 | 0.236 | 0.346 | 0.338 | 0.293 | 0.308 |
| Fe2                     |           | 1.949 | 1.929 | 2.111 | 1.930 | 1.962 | 1.955 | 2.193 | 2.129 | 2.090 | 2.110 | 2.592 | 2.576 | 2.561 | 2.561 |
| Mn                      |           | 0.053 | 0.049 | 0.035 | 0.040 | 0.056 | 0.064 | 0.068 | 0.044 | 0.037 | 0.059 | 0.044 | 0.061 | 0.059 | 0.063 |
| Mg                      |           | 3.154 | 3.145 | 3.112 | 3.184 | 3.236 | 3.147 | 3.023 | 3.048 | 3.155 | 3.155 | 2.600 | 2.666 | 2.641 | 2.538 |
| Y                       |           | 5.807 | 5.779 | 5.861 | 5.805 | 5.843 | 5.794 | 5.832 | 5.825 | 5.887 | 5.896 | 5.831 | 5.844 | 5.852 | 5.774 |
| Ca                      |           | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Na                      |           | 0.090 | 0.065 | 0.046 | 0.100 | 0.103 | 0.115 | 0.088 | 0.112 | 0.077 | 0.107 | 0.190 | 0.194 | 0.074 | 0.133 |
| K                       |           | 1.682 | 1.753 | 1.717 | 1.715 | 1.710 | 1.706 | 1.745 | 1.649 | 1.635 | 1.623 | 1.711 | 1.755 | 1.768 | 1.763 |
| X                       |           | 1.772 | 1.819 | 1.763 | 1.815 | 1.813 | 1.822 | 1.834 | 1.761 | 1.712 | 1.730 | 1.901 | 1.949 | 1.843 | 1.896 |
| Mg#                     |           | 0.618 | 0.620 | 0.596 | 0.623 | 0.623 | 0.617 | 0.580 | 0.589 | 0.602 | 0.599 | 0.501 | 0.509 | 0.508 | 0.498 |
| Fe#                     |           | 0.382 | 0.380 | 0.404 | 0.377 | 0.377 | 0.383 | 0.420 | 0.411 | 0.398 | 0.401 | 0.499 | 0.491 | 0.492 | 0.502 |
| Altot                   |           | 2.686 | 2.689 | 2.689 | 2.728 | 2.677 | 2.663 | 2.592 | 2.617 | 2.696 | 2.666 | 2.755 | 2.720 | 2.732 | 2.668 |



Table A4 (cont) - Chemical data on biotites from Mt. Cer pluton.

|                                | Rock type | QMZD  | QMZD  | QMZD  | QMZD  | QMZD  | QMZD  | QMZD  | QMZD  | QMZD  | QMZD  | QMZD  | QMZD  | QMZD  | QMZD  |
|--------------------------------|-----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|                                | Sample    | 100   | 100   | 101   | 101   | 101   | 101   | 101   | 101   | 102   | 102   | 102   | 102   | 103   | 103   |
|                                | Point     | 4/5   | 4/4   | 2/7   | 2/8   | 3/3   | 3/4   | 4/3   | 4/4   | 1/5   | 1/6   | 2/5   | 2/6   | 2/1   | 2/2   |
| SiO <sub>2</sub>               |           | 37.39 | 36.90 | 37.36 | 37.10 | 36.62 | 36.89 | 36.97 | 38.15 | 36.39 | 37.37 | 37.28 | 36.62 | 36.34 | 36.75 |
| TiO <sub>2</sub>               |           | 3.08  | 2.91  | 2.65  | 2.64  | 1.98  | 2.70  | 2.52  | 2.51  | 2.70  | 2.80  | 1.95  | 2.14  | 2.96  | 2.89  |
| Al <sub>2</sub> O <sub>3</sub> |           | 15.20 | 15.43 | 14.94 | 15.19 | 15.51 | 15.00 | 14.96 | 15.05 | 15.49 | 15.29 | 15.77 | 16.03 | 14.82 | 14.83 |
| FeO                            |           | 20.57 | 19.11 | 19.03 | 19.66 | 19.52 | 18.91 | 19.12 | 19.95 | 19.28 | 19.62 | 19.51 | 19.02 | 22.47 | 21.87 |
| MnO                            |           | 0.50  | 0.51  | 0.35  | 0.47  | 0.37  | 0.40  | 0.39  | 0.47  | 0.57  | 0.43  | 0.37  | 0.56  | 0.31  | 0.41  |
| MgO                            |           | 11.87 | 11.80 | 11.59 | 11.68 | 12.03 | 12.06 | 11.69 | 11.74 | 10.21 | 10.79 | 11.15 | 10.97 | 10.29 | 10.35 |
| CaO                            |           | 0.00  | 0.00  | 0.18  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  |
| Na <sub>2</sub> O              |           | 0.51  | 0.34  | 0.51  | 0.30  | 0.46  | 0.47  | 0.40  | 0.38  | 0.18  | 0.32  | 0.37  | 0.39  | 0.14  | 0.35  |
| K <sub>2</sub> O               |           | 9.07  | 9.31  | 8.89  | 8.80  | 8.83  | 9.07  | 9.18  | 9.11  | 9.00  | 9.01  | 8.82  | 9.11  | 8.97  | 9.04  |
| SUM                            |           | 98.19 | 96.31 | 95.50 | 95.84 | 95.32 | 95.50 | 95.23 | 97.36 | 93.82 | 95.63 | 95.22 | 94.84 | 96.30 | 96.49 |
| Site allocations (22 O)        |           |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Si                             |           | 5.562 | 5.571 | 5.670 | 5.622 | 5.584 | 5.607 | 5.642 | 5.692 | 5.639 | 5.674 | 5.672 | 5.606 | 5.568 | 5.605 |
| Al IV                          |           | 2.438 | 2.429 | 2.330 | 2.378 | 2.416 | 2.393 | 2.358 | 2.308 | 2.361 | 2.326 | 2.328 | 2.394 | 2.432 | 2.395 |
| Z                              |           | 8.000 | 8.000 | 8.000 | 8.000 | 8.000 | 8.000 | 8.000 | 8.000 | 8.000 | 8.000 | 8.000 | 8.000 | 8.000 | 8.000 |
| Al VI                          |           | 0.227 | 0.316 | 0.342 | 0.335 | 0.371 | 0.295 | 0.332 | 0.339 | 0.468 | 0.410 | 0.499 | 0.498 | 0.244 | 0.271 |
| Ti                             |           | 0.345 | 0.330 | 0.302 | 0.301 | 0.227 | 0.309 | 0.289 | 0.282 | 0.315 | 0.320 | 0.223 | 0.246 | 0.341 | 0.331 |
| Fe <sub>2</sub>                |           | 2.559 | 2.413 | 2.415 | 2.491 | 2.489 | 2.404 | 2.440 | 2.489 | 2.499 | 2.491 | 2.482 | 2.435 | 2.879 | 2.790 |
| Mn                             |           | 0.063 | 0.065 | 0.045 | 0.060 | 0.048 | 0.051 | 0.050 | 0.059 | 0.075 | 0.055 | 0.048 | 0.073 | 0.040 | 0.053 |
| Mg                             |           | 2.632 | 2.656 | 2.622 | 2.639 | 2.734 | 2.733 | 2.659 | 2.611 | 2.359 | 2.442 | 2.529 | 2.503 | 2.350 | 2.353 |
| Y                              |           | 5.826 | 5.780 | 5.727 | 5.826 | 5.869 | 5.792 | 5.771 | 5.781 | 5.715 | 5.719 | 5.781 | 5.755 | 5.855 | 5.799 |
| Ca                             |           | 0.000 | 0.000 | 0.029 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Na                             |           | 0.147 | 0.100 | 0.150 | 0.088 | 0.136 | 0.139 | 0.118 | 0.110 | 0.054 | 0.094 | 0.109 | 0.116 | 0.042 | 0.104 |
| K                              |           | 1.721 | 1.793 | 1.721 | 1.701 | 1.718 | 1.759 | 1.787 | 1.734 | 1.779 | 1.745 | 1.712 | 1.779 | 1.753 | 1.759 |
| X                              |           | 1.868 | 1.893 | 1.900 | 1.789 | 1.854 | 1.897 | 1.905 | 1.844 | 1.833 | 1.839 | 1.821 | 1.895 | 1.795 | 1.863 |
| Mg#                            |           | 0.507 | 0.524 | 0.521 | 0.514 | 0.523 | 0.532 | 0.522 | 0.512 | 0.486 | 0.495 | 0.505 | 0.507 | 0.449 | 0.458 |
| Fe#                            |           | 0.493 | 0.476 | 0.479 | 0.486 | 0.477 | 0.468 | 0.478 | 0.488 | 0.514 | 0.505 | 0.495 | 0.493 | 0.551 | 0.542 |
| Altot                          |           | 2.665 | 2.745 | 2.672 | 2.713 | 2.787 | 2.688 | 2.690 | 2.647 | 2.829 | 2.736 | 2.827 | 2.892 | 2.676 | 2.666 |

Table A4 (cont) - Chemical data on biotites from Mt. Cer pluton.

|                                | Rock type | QMZD  | QMZD  | QMZD  | QMZD  | QMZD  | QMZD  | QMZD  | QMZD  | QMZD  | QMZD  | QMZD  | QMZD  | QMZD  | QMZD  |
|--------------------------------|-----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|                                | Sample    | 103   | 103   | 103   | 103   | 108   | 108   | 108   | 108   | 113   | 113   | 113   | 113   | 113   | 113   |
|                                | Point     | 1/1   | 1/2   | 3/6   | 3/5   | 3/5   | 3/6   | 6/1   | 6/2   | 2/5   | 2/6   | 3/3   | 3/4   | 4/5   | 4/4   |
| SiO <sub>2</sub>               |           | 37.38 | 36.06 | 37.30 | 36.17 | 37.44 | 37.47 | 37.24 | 37.07 | 36.57 | 36.24 | 35.76 | 36.33 | 36.99 | 36.76 |
| TiO <sub>2</sub>               |           | 2.77  | 1.73  | 2.81  | 3.02  | 2.72  | 2.76  | 3.11  | 2.81  | 2.72  | 2.74  | 2.99  | 2.67  | 2.72  | 2.73  |
| Al <sub>2</sub> O <sub>3</sub> |           | 15.29 | 14.44 | 14.79 | 14.68 | 15.11 | 15.52 | 15.20 | 15.17 | 15.23 | 14.91 | 14.62 | 15.01 | 15.05 | 14.92 |
| FeO                            |           | 20.96 | 20.36 | 21.36 | 21.40 | 18.48 | 18.99 | 18.76 | 18.38 | 19.39 | 19.07 | 19.58 | 20.11 | 18.30 | 18.34 |
| MnO                            |           | 0.41  | 0.50  | 0.33  | 0.42  | 0.10  | 0.42  | 0.43  | 0.45  | 0.21  | 0.36  | 0.52  | 0.47  | 0.69  | 0.35  |
| MgO                            |           | 11.21 | 11.74 | 10.99 | 11.08 | 12.06 | 12.10 | 11.86 | 12.03 | 12.36 | 11.80 | 11.44 | 11.44 | 12.04 | 12.59 |
| CaO                            |           | 0.12  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  |
| Na <sub>2</sub> O              |           | 0.41  | 0.60  | 0.47  | 0.63  | 0.56  | 0.47  | 0.41  | 0.37  | 0.43  | 0.49  | 0.42  | 0.33  | 0.67  | 0.43  |
| K <sub>2</sub> O               |           | 9.07  | 9.05  | 8.95  | 9.22  | 9.07  | 8.98  | 8.83  | 8.77  | 8.83  | 8.76  | 8.81  | 8.89  | 8.51  | 8.53  |
| SUM                            |           | 97.62 | 94.48 | 97.00 | 96.62 | 95.54 | 96.71 | 95.84 | 95.05 | 95.74 | 94.37 | 94.14 | 95.25 | 94.97 | 94.65 |
| Site allocations (22 O)        |           |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Si                             |           | 5.600 | 5.604 | 5.634 | 5.522 | 5.660 | 5.608 | 5.620 | 5.631 | 5.548 | 5.581 | 5.550 | 5.571 | 5.628 | 5.606 |
| Al IV                          |           | 2.400 | 2.396 | 2.366 | 2.478 | 2.340 | 2.392 | 2.380 | 2.369 | 2.452 | 2.419 | 2.450 | 2.429 | 2.372 | 2.394 |
| Z                              |           | 8.000 | 8.000 | 8.000 | 8.000 | 8.000 | 8.000 | 8.000 | 8.000 | 8.000 | 8.000 | 8.000 | 8.000 | 8.000 | 8.000 |
| Al VI                          |           | 0.299 | 0.249 | 0.266 | 0.164 | 0.352 | 0.346 | 0.323 | 0.347 | 0.271 | 0.287 | 0.224 | 0.283 | 0.327 | 0.287 |
| Ti                             |           | 0.312 | 0.202 | 0.319 | 0.347 | 0.309 | 0.311 | 0.353 | 0.321 | 0.310 | 0.317 | 0.349 | 0.308 | 0.311 | 0.313 |
| Fe <sub>2</sub>                |           | 2.626 | 2.646 | 2.698 | 2.732 | 2.336 | 2.377 | 2.367 | 2.335 | 2.460 | 2.456 | 2.541 | 2.579 | 2.329 | 2.339 |
| Mn                             |           | 0.052 | 0.066 | 0.042 | 0.054 | 0.013 | 0.053 | 0.055 | 0.058 | 0.027 | 0.047 | 0.068 | 0.061 | 0.089 | 0.045 |
| Mg                             |           | 2.503 | 2.720 | 2.474 | 2.522 | 2.718 | 2.700 | 2.668 | 2.724 | 2.795 | 2.709 | 2.647 | 2.615 | 2.731 | 2.862 |
| Y                              |           | 5.793 | 5.883 | 5.800 | 5.819 | 5.728 | 5.787 | 5.766 | 5.785 | 5.863 | 5.816 | 5.829 | 5.846 | 5.787 | 5.847 |
| Ca                             |           | 0.019 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Na                             |           | 0.119 | 0.181 | 0.138 | 0.186 | 0.164 | 0.136 | 0.120 | 0.109 | 0.126 | 0.146 | 0.126 | 0.098 | 0.198 | 0.127 |
| K                              |           | 1.733 | 1.794 | 1.724 | 1.796 | 1.749 | 1.715 | 1.700 | 1.700 | 1.709 | 1.721 | 1.744 | 1.739 | 1.652 | 1.659 |
| X                              |           | 1.872 | 1.975 | 1.862 | 1.982 | 1.913 | 1.851 | 1.820 | 1.809 | 1.835 | 1.867 | 1.871 | 1.837 | 1.849 | 1.787 |
| Mg#                            |           | 0.488 | 0.507 | 0.478 | 0.480 | 0.538 | 0.532 | 0.530 | 0.538 | 0.532 | 0.524 | 0.510 | 0.503 | 0.540 | 0.550 |
| Fe#                            |           | 0.512 | 0.493 | 0.522 | 0.520 | 0.462 | 0.468 | 0.470 | 0.462 | 0.468 | 0.476 | 0.490 | 0.497 | 0.460 | 0.450 |
| Altot                          |           | 2.699 | 2.645 | 2.632 | 2.642 | 2.692 | 2.738 | 2.703 | 2.716 | 2.723 | 2.706 | 2.674 | 2.712 | 2.699 | 2.681 |

Table A4 (cont) - Chemical data on biotites from Mt. Cer pluton.

|                         | Rock type    | GDS     | GDS     | GDS     | GDS     | TMG     | TMG     | TMG        | TMG        | TMG        | Biotites from enclave reported in Knežević, Karamata & Cvetković (1994) |       |
|-------------------------|--------------|---------|---------|---------|---------|---------|---------|------------|------------|------------|-------------------------------------------------------------------------|-------|
|                         | Sample Point | 115 1/1 | 115 1/2 | 115 5/3 | 115 5/4 | 106 7/3 | 106 7/4 | 106 Mu 2/3 | 106 Mu 2/4 | 106 Mu 4/5 |                                                                         |       |
| SiO2                    |              | 38.06   | 36.85   | 38.01   | 37.17   | 35.12   | 34.76   | 44.70      | 46.05      | 45.48      | 38.45                                                                   | 37.65 |
| TiO2                    |              | 2.48    | 3.19    | 2.19    | 2.46    | 2.81    | 2.90    | 0.70       | 1.02       | 0.77       | 2.34                                                                    | 2.37  |
| Al2O3                   |              | 16.93   | 15.86   | 17.13   | 16.86   | 18.80   | 18.23   | 34.41      | 34.74      | 34.27      | 14.52                                                                   | 14.56 |
| FeO                     |              | 20.02   | 19.69   | 19.17   | 19.49   | 23.94   | 23.38   | 2.68       | 2.44       | 2.54       | 16.71                                                                   | 16.53 |
| MnO                     |              | 0.54    | 0.69    | 0.58    | 0.52    | 0.42    | 0.45    | 0.00       | 0.00       | 0.01       | 0.40                                                                    | 0.37  |
| MgO                     |              | 9.94    | 10.05   | 10.54   | 10.40   | 6.22    | 5.89    | 0.70       | 0.73       | 0.56       | 14.38                                                                   | 14.88 |
| CaO                     |              | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00       | 0.00       | 0.00       | 0.00                                                                    | 0.00  |
| Na2O                    |              | 0.31    | 0.38    | 0.44    | 0.36    | 0.43    | 0.52    | 0.71       | 0.57       | 0.74       | 0.43                                                                    | 0.09  |
| K2O                     |              | 8.86    | 8.87    | 8.84    | 8.74    | 8.79    | 8.65    | 9.94       | 10.07      | 9.71       | 9.54                                                                    | 9.52  |
| SUM                     |              | 97.14   | 95.58   | 96.90   | 96.00   | 96.53   | 94.78   | 93.84      | 95.62      | 94.08      | 96.77                                                                   | 95.97 |
| Site allocations (22 O) |              |         |         |         |         |         |         |            |            |            |                                                                         |       |
| Si                      |              | 5.667   | 5.607   | 5.654   | 5.600   | 5.389   | 5.429   | 6.085      | 6.134      | 6.154      | 5.702                                                                   | 5.631 |
| Al IV                   |              | 2.333   | 2.393   | 2.346   | 2.400   | 2.611   | 2.571   | 1.915      | 1.866      | 1.846      | 2.298                                                                   | 2.369 |
| Z                       |              | 8.000   | 8.000   | 8.000   | 8.000   | 8.000   | 8.000   | 8.000      | 8.000      | 8.000      | 8.000                                                                   | 8.000 |
| Al VI                   |              | 0.638   | 0.451   | 0.657   | 0.594   | 0.789   | 0.785   | 3.607      | 3.588      | 3.620      | 0.240                                                                   | 0.198 |
| Ti                      |              | 0.278   | 0.365   | 0.245   | 0.279   | 0.324   | 0.341   | 0.072      | 0.102      | 0.078      | 0.261                                                                   | 0.267 |
| Fe2                     |              | 2.493   | 2.505   | 2.385   | 2.456   | 3.072   | 3.054   | 0.305      | 0.272      | 0.287      | 2.072                                                                   | 2.068 |
| Mn                      |              | 0.068   | 0.089   | 0.073   | 0.066   | 0.055   | 0.060   | 0.000      | 0.000      | 0.001      | 0.050                                                                   | 0.047 |
| Mg                      |              | 2.206   | 2.280   | 2.337   | 2.336   | 1.423   | 1.372   | 0.142      | 0.145      | 0.113      | 3.179                                                                   | 3.318 |
| Y                       |              | 5.683   | 5.689   | 5.697   | 5.731   | 5.663   | 5.611   | 4.125      | 4.107      | 4.100      | 5.803                                                                   | 5.897 |
| Ca                      |              | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000      | 0.000      | 0.000      | 0.000                                                                   | 0.000 |
| Na                      |              | 0.089   | 0.112   | 0.127   | 0.105   | 0.128   | 0.157   | 0.187      | 0.147      | 0.194      | 0.124                                                                   | 0.026 |
| K                       |              | 1.683   | 1.722   | 1.678   | 1.680   | 1.721   | 1.724   | 1.726      | 1.711      | 1.676      | 1.805                                                                   | 1.817 |
| X                       |              | 1.773   | 1.834   | 1.804   | 1.785   | 1.849   | 1.881   | 1.914      | 1.858      | 1.870      | 1.929                                                                   | 1.843 |
| Mg#                     |              | 0.470   | 0.476   | 0.495   | 0.487   | 0.317   | 0.310   | 0.318      | 0.348      | 0.282      | 0.605                                                                   | 0.616 |
| Fe#                     |              | 0.530   | 0.524   | 0.505   | 0.513   | 0.683   | 0.690   | 0.682      | 0.652      | 0.718      | 0.395                                                                   | 0.384 |
| Altot                   |              | 2.971   | 2.844   | 3.003   | 2.994   | 3.400   | 3.356   | 5.522      | 5.454      | 5.466      | 2.538                                                                   | 2.567 |

Table A5 - Chemical data on muscovites from Mt. Cer pluton.

| Rock type               | TMG   | TMG   | TMG   | TMG   | TMG   | TMG   |
|-------------------------|-------|-------|-------|-------|-------|-------|
| Sample                  | 107   | 110   | 106   | 106   | 106   | 106   |
| Point                   | -     | -     | -     | 2/3   | 2/4   | 4/5   |
| SiO2 wt%                | 46.59 | 46.52 | 45.41 | 44.7  | 46.05 | 45.48 |
| TiO2                    | 0.87  | 0.37  | 0.83  | 0.7   | 1.02  | 0.77  |
| Al2O3                   | 35.32 | 33.54 | 34.47 | 34.41 | 34.74 | 34.27 |
| FeOt                    | 2.52  | 4.21  | 2.55  | 2.68  | 2.44  | 2.54  |
| MnO                     | 0.02  | 0     | 0     | 0     | 0     | 0.01  |
| MgO                     | 0.66  | 0.86  | 0.66  | 0.7   | 0.73  | 0.56  |
| CaO                     | 0.07  | 0     | 0     | 0     | 0     | 0     |
| Na2O                    | 0.81  | 0.44  | 0.67  | 0.71  | 0.57  | 0.74  |
| K2O                     | 10.28 | 10.48 | 9.91  | 9.94  | 10.07 | 9.71  |
| Total                   | 97.13 | 96.41 | 94.51 | 93.84 | 95.62 | 94.08 |
| Site allocations (22 O) |       |       |       |       |       |       |
| Si                      | 6.121 | 6.21  | 6.125 | 6.085 | 6.134 | 6.154 |
| AlIV                    | 1.879 | 1.79  | 1.875 | 1.915 | 1.866 | 1.846 |
| Z                       | 8     | 8     | 8     | 8     | 8     | 8     |
| AlVI                    | 3.59  | 3.487 | 3.605 | 3.607 | 3.588 | 3.62  |
| Ti                      | 0.086 | 0.037 | 0.084 | 0.072 | 0.102 | 0.078 |
| Fe2+                    | 0.277 | 0.47  | 0.288 | 0     | 0     | 0     |
| Mn                      | 0.002 | 0     | 0     | 0.305 | 0.272 | 0.287 |
| Mg                      | 0.128 | 0.171 | 0.133 | 0     | 0     | 0.001 |
| Y                       | 4.084 | 4.165 | 4.111 | 0.142 | 0.145 | 0.113 |
| Ca                      | 0.009 | 0     | 0     | 0     | 0     | 0     |
| Na                      | 0.207 | 0.113 | 0.176 | 0.187 | 0.147 | 0.194 |
| K                       | 1.723 | 1.785 | 1.705 | 1.726 | 1.711 | 1.676 |
| X                       | 1.94  | 1.898 | 1.881 | 1.913 | 1.858 | 1.87  |
| Mg#                     | 0.316 | 0.267 | 0.316 | 0.318 | 0.348 | 0.282 |
| Fe#                     | 0.684 | 0.733 | 0.684 | 0.682 | 0.652 | 0.718 |
| Altot                   | 5.469 | 5.277 | 5.48  | 5.522 | 5.454 | 5.466 |

**Table A6** Modelled bulk partition coefficients for a series of trace elements used to calculate the two lines of descents reported in figure 8. The two lines of descent bound a set of models with intermediate values of bulk partition coefficients.

|    | MFC1 | MFC2 |
|----|------|------|
| Cr | 2.02 | 1.51 |
| Rb | 1.28 | 0.72 |
| Sr | 0.75 | 0.68 |
| Y  | 0.95 | 0.71 |
| Zr | 1.35 | 1.1  |
| Nb | 1.33 | 1.04 |
| Ba | 1.36 | 0.74 |
| La | 1.04 | 0.87 |
| Nd | 2.3  | 1.04 |
| Tb | 1.21 | 0.95 |
| Yb | 0.9  | 0.77 |
| Th | 1.17 | 1    |

**Table A7** Parameter  $\rho$  calculated for QMZD rocks according to equation 6 of Aitcheson & Forrest (1994).

|    | QMZD<br>CER113 | QMZD<br>CER101 | QMZD<br>CER103 | QMZD<br>CER102 | QMZD<br>CER111 | QMZD<br>CER108 | QMZD<br>CER100 | QMZD<br>CER109 |
|----|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Cr | 0.35           | 0.40           | 0.40           | 0.40           | 0.41           | 0.52           | 0.46           | 0.45           |
| Rb | 0.37           | 0.41           | 0.40           | 0.42           | 0.42           | 0.55           | 0.49           | 0.47           |
| Sr | 0.37           | 0.42           | 0.42           | 0.42           | 0.43           | 0.55           | 0.49           | 0.47           |
| Y  | 0.30           | 0.32           | 0.37           | 0.21           | 0.33           | 0.30           | 0.38           | 0.32           |
| Zr | 0.36           | 0.40           | 0.40           | 0.40           | 0.41           | 0.53           | 0.47           | 0.44           |
| Nb | 0.37           | 0.42           | 0.42           | 0.42           | 0.43           | 0.55           | 0.49           | 0.47           |
| Ba | -0.41          | 0.31           | 0.35           | 0.18           | 0.28           | 0.51           | 0.41           | 0.31           |
| La | 0.35           | 0.38           | 0.40           | -              | -              | -              | -              | -              |
| Nd | 0.35           | 0.39           | 0.40           | -              | -              | -              | -              | -              |
| Tb | 0.34           | 0.40           | 0.41           | -              | -              | -              | -              | -              |
| Yb | 0.16           | 0.27           | 0.36           | -              | -              | -              | -              | -              |
| Th | 0.36           | 0.40           | 0.41           | -              | -              | -              | -              | -              |

Equation 6 from Aitcheson & Forrest (1994).

$$\rho = \left( \frac{r}{r+1} \right) \left\langle \left[ \frac{C_m^0 (r + D - 1) - rC_a}{C_m (r + D - 1) - rC_a} \right]^{\frac{(r-1)}{(r+D-1)}} - 1 \right\rangle$$

$\rho$  = contaminant/original magma ratio

$r$  = rate of assimilation/rate of fractional crystallization

$D$  = bulk distribution coefficient of the element

$C_m^0$  = element concentration in the original magma

$C_m$  = element concentration in the contaminated magma

$C_a$  = element concentration in the contaminating magma