**Geological Magazine**

New constraints from zircon, monazite and uraninite dating on the commencement of sedimentation in the Cuddapah basin, India

DEBIDARSANI SAHOO§, KAMAL LOCHAN PRUSETH\*,§, DEWASHISH UPADHYAY§, SAMEER RANJAN§, DIPAK C. PAL†, RAHUL BANERJEE‡, SHEKHAR GUPTA¶

Supplementary Material

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Table S2. EPMA analyses of uraninite from the Banganapalle Quartzite with their U-Pbtotal ages. | | | | | | | | | | | | | | | | |
| **Anal. No.** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** | **15** | **16** |
| P2O5 | 0.09 | 0.04 | 0.06 | 0.13 | 0.06 | 0.02 | 0.02 | 0.00 | 0.00 | 0.00 | 0.03 | 0.01 | 0.00 | 0.11 | 0.06 | 0.05 |
| UO2 | 81.81 | 82.80 | 85.84 | 81.31 | 83.72 | 83.70 | 86.69 | 85.42 | 85.56 | 87.00 | 85.47 | 75.78 | 81.17 | 73.46 | 85.26 | 79.01 |
| SiO2 | 2.27 | 3.29 | 2.45 | 1.88 | 3.94 | 2.46 | 2.88 | 2.61 | 1.80 | 2.30 | 1.33 | 2.31 | 3.02 | 3.33 | 2.54 | 2.25 |
| ZrO2 | 1.00 | 1.21 | 1.55 | 1.09 | 1.16 | 1.20 | 1.32 | 1.51 | 0.93 | 1.09 | 1.30 | 1.24 | 1.49 | 1.28 | 1.35 | 1.40 |
| TiO2 | 0.91 | 1.01 | 0.87 | 0.68 | 0.65 | 0.78 | 0.89 | 1.18 | 0.84 | 1.11 | 0.81 | 0.97 | 1.01 | 0.94 | 1.18 | 0.91 |
| Al2O3 | 0.35 | 0.19 | 0.23 | 0.31 | 0.54 | 0.36 | 0.26 | 0.26 | 0.28 | 0.29 | 0.19 | 0.38 | 0.36 | 0.71 | 0.36 | 0.24 |
| La2O3 | 0.19 | 0.21 | 0.18 | 0.18 | 0.13 | 0.22 | 0.17 | 0.25 | 0.32 | 0.18 | 0.27 | 0.17 | 0.20 | 0.12 | 0.17 | 0.22 |
| Ce2O3 | 1.10 | 1.15 | 1.10 | 0.95 | 0.86 | 1.14 | 1.23 | 1.29 | 1.36 | 1.21 | 1.40 | 1.00 | 1.04 | 0.92 | 1.25 | 1.39 |
| Pr2O3 | 0.12 | 0.12 | 0.08 | 0.09 | 0.08 | 0.03 | 0.12 | 0.04 | 0.08 | 0.09 | 0.15 | 0.04 | 0.09 | 0.06 | 0.07 | 0.07 |
| Nd2O3 | 0.67 | 0.73 | 0.76 | 0.75 | 0.59 | 0.80 | 0.85 | 0.97 | 0.89 | 0.86 | 0.96 | 0.76 | 0.75 | 0.71 | 0.89 | 0.94 |
| SmO | 0.08 | 0.11 | 0.10 | 0.12 | 0.05 | 0.10 | 0.11 | 0.13 | 0.15 | 0.16 | 0.17 | 0.12 | 0.09 | 0.15 | 0.11 | 0.14 |
| EuO | 0.06 | 0.09 | 0.09 | 0.09 | 0.05 | 0.07 | 0.10 | 0.12 | 0.13 | 0.07 | 0.09 | 0.03 | 0.07 | 0.07 | 0.10 | 0.12 |
| Gd2O3 | 0.20 | 0.09 | 0.23 | 0.20 | 0.14 | 0.24 | 0.24 | 0.25 | 0.23 | 0.27 | 0.23 | 0.24 | 0.22 | 0.09 | 0.32 | 0.15 |
| Dy2O3 | 0.09 | 0.20 | 0.22 | 0.15 | 0.14 | 0.16 | 0.20 | 0.19 | 0.07 | 0.15 | 0.12 | 0.22 | 0.14 | 0.18 | 0.20 | 0.11 |
| Ho2O3 | 0.02 | 0.00 | 0.02 | 0.00 | 0.00 | 0.02 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.06 |
| Y2O3 | 0.51 | 0.44 | 0.47 | 0.44 | 0.34 | 0.56 | 0.64 | 0.71 | 0.56 | 0.61 | 0.54 | 0.51 | 0.46 | 0.41 | 0.69 | 0.73 |
| FeO | 0.47 | 0.52 | 0.29 | 0.45 | 0.34 | 0.33 | 0.38 | 0.40 | 0.33 | 0.36 | 0.28 | 0.33 | 0.35 | 0.34 | 0.39 | 0.62 |
| CaO | 1.85 | 1.59 | 1.94 | 1.98 | 1.97 | 1.82 | 1.73 | 1.62 | 2.57 | 1.88 | 2.30 | 1.45 | 1.51 | 1.37 | 1.67 | 1.80 |
| Na2O | 0.08 | 0.12 | 0.03 | 0.06 | 0.09 | 0.03 | 0.03 | 0.00 | 0.02 | 0.03 | 0.01 | 0.04 | 0.02 | 0.05 | 0.00 | 0.00 |
| K2O | 0.26 | 0.33 | 0.23 | 0.22 | 0.28 | 0.27 | 0.22 | 0.28 | 0.21 | 0.21 | 0.22 | 0.21 | 0.24 | 0.24 | 0.24 | 0.20 |
| PbO | 6.90 | 5.22 | 3.02 | 7.94 | 3.88 | 4.93 | 1.67 | 2.32 | 3.62 | 2.00 | 4.07 | 11.90 | 6.67 | 12.70 | 2.64 | 8.05 |
| Total | 99.04 | 99.46 | 99.76 | 99.03 | 99.02 | 99.24 | 99.76 | 99.56 | 99.95 | 99.84 | 99.95 | 97.71 | 98.94 | 97.24 | 99.50 | 98.47 |
| Age (Ma) | 600 | 455 | 259 | 688 | 339 | 426 | 144 | 201 | 310 | 171 | 347 | 1062 | 586 | 1156 | 229 | 716 |
| 2σ | 15 | 13 | 11 | 16 | 12 | 13 | 9 | 10 | 11 | 9 | 12 | 20 | 15 | 21 | 11 | 17 |
| **Anal. No.** | **17** | **18** | **19** | **20** | **21** | **22** | **23** | **24** | **25** | **26** | **27** | **28** | **29** | **30** | **31** | **32** |
| P2O5 | 0.01 | 0.06 | 0.05 | 0.05 | 0.01 | 0.02 | 0.00 | 0.05 | 0.12 | 0.02 | 0.00 | 0.07 | 0.09 | 0.02 | 0.04 | 0.00 |
| UO2 | 79.29 | 81.03 | 84.88 | 84.33 | 78.86 | 85.74 | 85.67 | 87.02 | 83.94 | 86.07 | 86.01 | 75.10 | 81.16 | 86.12 | 84.49 | 86.41 |
| SiO2 | 2.50 | 3.13 | 2.65 | 2.35 | 2.23 | 3.08 | 1.82 | 2.07 | 2.98 | 1.91 | 2.62 | 2.92 | 3.27 | 2.92 | 2.40 | 1.89 |
| ZrO2 | 1.30 | 1.27 | 0.76 | 0.91 | 0.72 | 1.47 | 0.88 | 0.86 | 0.61 | 0.73 | 0.94 | 1.49 | 1.43 | 1.66 | 1.99 | 0.95 |
| TiO2 | 0.93 | 0.79 | 0.78 | 0.72 | 0.55 | 0.68 | 0.51 | 0.55 | 0.58 | 0.48 | 0.78 | 0.95 | 1.02 | 0.96 | 0.92 | 0.77 |
| Al2O3 | 0.31 | 0.34 | 0.24 | 0.32 | 0.30 | 0.36 | 0.32 | 0.24 | 0.21 | 0.32 | 0.47 | 0.31 | 0.36 | 0.31 | 0.33 | 0.35 |
| La2O3 | 0.30 | 0.21 | 0.28 | 0.21 | 0.11 | 0.16 | 0.24 | 0.15 | 0.12 | 0.19 | 0.16 | 0.05 | 0.08 | 0.20 | 0.19 | 0.23 |
| Ce2O3 | 1.41 | 1.27 | 1.36 | 1.30 | 0.76 | 0.97 | 0.98 | 1.02 | 0.86 | 0.88 | 1.07 | 0.76 | 0.94 | 1.20 | 1.11 | 1.06 |
| Pr2O3 | 0.12 | 0.04 | 0.19 | 0.10 | 0.02 | 0.09 | 0.08 | 0.08 | 0.05 | 0.04 | 0.11 | 0.04 | 0.06 | 0.05 | 0.08 | 0.14 |
| Nd2O3 | 1.03 | 0.89 | 0.95 | 0.83 | 0.64 | 0.73 | 0.70 | 0.72 | 0.65 | 0.61 | 0.70 | 0.63 | 0.77 | 0.84 | 0.69 | 0.80 |
| SmO | 0.16 | 0.16 | 0.15 | 0.14 | 0.12 | 0.09 | 0.15 | 0.07 | 0.10 | 0.03 | 0.10 | 0.10 | 0.12 | 0.16 | 0.10 | 0.11 |
| EuO | 0.12 | 0.11 | 0.12 | 0.10 | 0.09 | 0.12 | 0.09 | 0.14 | 0.10 | 0.09 | 0.10 | 0.06 | 0.05 | 0.12 | 0.05 | 0.04 |
| Gd2O3 | 0.23 | 0.21 | 0.32 | 0.19 | 0.27 | 0.15 | 0.35 | 0.22 | 0.18 | 0.15 | 0.21 | 0.18 | 0.12 | 0.14 | 0.14 | 0.21 |
| Dy2O3 | 0.13 | 0.15 | 0.11 | 0.09 | 0.15 | 0.19 | 0.12 | 0.14 | 0.20 | 0.10 | 0.21 | 0.23 | 0.23 | 0.24 | 0.17 | 0.20 |
| Ho2O3 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.02 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.01 | 0.00 |
| Y2O3 | 0.73 | 0.65 | 0.67 | 0.68 | 0.45 | 0.51 | 0.54 | 0.50 | 0.50 | 0.42 | 0.58 | 0.45 | 0.53 | 0.62 | 0.46 | 0.48 |
| FeO | 0.64 | 0.46 | 0.48 | 0.49 | 0.28 | 0.27 | 0.22 | 0.31 | 0.32 | 0.31 | 0.38 | 0.31 | 0.33 | 0.45 | 0.46 | 0.37 |
| CaO | 1.98 | 1.45 | 2.50 | 2.26 | 2.06 | 2.00 | 2.49 | 2.22 | 2.03 | 2.60 | 1.83 | 1.25 | 1.40 | 1.74 | 1.70 | 2.21 |
| Na2O | 0.00 | 0.04 | 0.02 | 0.00 | 0.04 | 0.08 | 0.05 | 0.06 | 0.17 | 0.02 | 0.07 | 0.06 | 0.00 | 0.02 | 0.00 | 0.01 |
| K2O | 0.21 | 0.24 | 0.23 | 0.23 | 0.22 | 0.29 | 0.24 | 0.23 | 0.26 | 0.21 | 0.25 | 0.24 | 0.22 | 0.25 | 0.21 | 0.23 |
| PbO | 7.61 | 6.32 | 3.05 | 4.38 | 10.59 | 2.83 | 4.44 | 3.19 | 5.29 | 4.52 | 3.02 | 12.43 | 6.54 | 1.72 | 3.89 | 3.29 |
| Total | 98.99 | 98.83 | 99.79 | 99.68 | 98.47 | 99.84 | 99.89 | 99.87 | 99.28 | 99.70 | 99.63 | 97.64 | 98.70 | 99.73 | 99.43 | 99.76 |
| Age (Ma) | 677 | 557 | 264 | 378 | 922 | 244 | 377 | 270 | 455 | 382 | 259 | 1113 | 574 | 149 | 336 | 280 |
| 2σ | 16 | 15 | 11 | 12 | 18 | 10 | 12 | 11 | 13 | 12 | 11 | 20 | 15 | 9 | 12 | 11 |
| **Anal. No.** | **33** | **34** | **35** | **36** | **37** | **38** | **39** | **40** | **41** | **42** | **43** | **44** | **45** | **46** | **47** | **48** |
| P2O5 | 0.07 | 0.01 | 0.10 | 0.00 | 0.05 | 0.02 | 0.02 | 0.03 | 0.00 | 0.01 | 0.05 | 0.04 | 0.03 | 0.03 | 0.00 | 0.03 |
| UO2 | 85.53 | 80.07 | 80.36 | 86.36 | 70.62 | 86.05 | 64.23 | 73.13 | 85.31 | 85.36 | 84.79 | 86.14 | 82.01 | 84.86 | 80.22 | 85.42 |
| SiO2 | 2.51 | 2.14 | 1.97 | 2.86 | 2.84 | 1.83 | 2.66 | 2.73 | 2.59 | 2.35 | 1.97 | 2.07 | 1.92 | 2.07 | 1.79 | 2.58 |
| ZrO2 | 1.49 | 0.56 | 1.10 | 1.23 | 1.18 | 0.75 | 0.63 | 0.55 | 0.97 | 0.93 | 1.12 | 1.10 | 0.72 | 0.71 | 0.74 | 1.09 |
| TiO2 | 0.86 | 0.78 | 0.84 | 0.92 | 0.88 | 0.77 | 0.73 | 0.77 | 0.83 | 0.76 | 0.74 | 0.74 | 0.67 | 0.64 | 0.64 | 0.81 |
| Al2O3 | 0.29 | 0.51 | 0.24 | 0.45 | 0.55 | 0.28 | 0.47 | 0.43 | 0.46 | 0.51 | 0.40 | 0.36 | 0.40 | 0.31 | 0.40 | 0.35 |
| La2O3 | 0.20 | 0.17 | 0.16 | 0.17 | 0.15 | 0.21 | 0.12 | 0.15 | 0.28 | 0.23 | 0.17 | 0.13 | 0.25 | 0.22 | 0.25 | 0.26 |
| Ce2O3 | 1.00 | 1.10 | 1.02 | 0.98 | 0.80 | 1.08 | 0.90 | 0.93 | 1.26 | 1.15 | 1.09 | 1.07 | 1.32 | 1.18 | 1.16 | 1.41 |
| Pr2O3 | 0.07 | 0.04 | 0.08 | 0.03 | 0.01 | 0.08 | 0.07 | 0.07 | 0.15 | 0.15 | 0.09 | 0.13 | 0.17 | 0.11 | 0.25 | 0.11 |
| Nd2O3 | 0.72 | 0.78 | 0.67 | 0.69 | 0.52 | 0.73 | 0.71 | 0.73 | 0.98 | 0.83 | 0.82 | 0.74 | 0.86 | 0.89 | 0.81 | 1.03 |
| SmO | 0.10 | 0.15 | 0.11 | 0.13 | 0.02 | 0.13 | 0.08 | 0.07 | 0.13 | 0.13 | 0.17 | 0.10 | 0.15 | 0.18 | 0.17 | 0.16 |
| EuO | 0.05 | 0.10 | 0.05 | 0.06 | 0.14 | 0.10 | 0.08 | 0.06 | 0.12 | 0.11 | 0.10 | 0.15 | 0.13 | 0.11 | 0.07 | 0.15 |
| Gd2O3 | 0.18 | 0.19 | 0.11 | 0.11 | 0.25 | 0.17 | 0.33 | 0.26 | 0.24 | 0.18 | 0.21 | 0.24 | 0.16 | 0.20 | 0.19 | 0.25 |
| Dy2O3 | 0.19 | 0.11 | 0.17 | 0.13 | 0.10 | 0.07 | 0.13 | 0.10 | 0.15 | 0.20 | 0.12 | 0.20 | 0.09 | 0.14 | 0.15 | 0.10 |
| Ho2O3 | 0.00 | 0.03 | 0.00 | 0.00 | 0.01 | 0.04 | 0.00 | 0.00 | 0.00 | 0.00 | 0.04 | 0.00 | 0.00 | 0.00 | 0.03 | 0.01 |
| Y2O3 | 0.42 | 0.54 | 0.47 | 0.45 | 0.45 | 0.43 | 0.51 | 0.38 | 0.59 | 0.53 | 0.51 | 0.47 | 0.53 | 0.63 | 0.58 | 0.71 |
| FeO | 0.36 | 0.37 | 0.28 | 0.41 | 0.42 | 0.53 | 0.41 | 0.36 | 0.51 | 0.43 | 0.37 | 0.30 | 0.48 | 0.34 | 0.40 | 0.61 |
| CaO | 1.86 | 1.91 | 1.84 | 2.05 | 1.92 | 2.53 | 1.23 | 1.92 | 2.13 | 2.09 | 2.24 | 2.26 | 2.33 | 2.26 | 2.28 | 2.20 |
| Na2O | 0.00 | 0.06 | 0.01 | 0.05 | 0.07 | 0.03 | 0.17 | 0.13 | 0.00 | 0.07 | 0.02 | 0.04 | 0.00 | 0.00 | 0.00 | 0.00 |
| K2O | 0.26 | 0.21 | 0.24 | 0.28 | 0.33 | 0.22 | 0.31 | 0.32 | 0.25 | 0.26 | 0.26 | 0.25 | 0.21 | 0.21 | 0.21 | 0.18 |
| PbO | 3.50 | 8.63 | 9.05 | 2.35 | 16.05 | 3.91 | 21.23 | 13.87 | 2.97 | 3.54 | 4.30 | 3.35 | 6.56 | 4.48 | 8.70 | 2.54 |
| Total | 99.65 | 98.45 | 98.85 | 99.74 | 97.35 | 99.96 | 95.02 | 96.98 | 99.94 | 99.82 | 99.58 | 99.88 | 99.01 | 99.60 | 99.04 | 99.98 |
| Age (Ma) | 300 | 754 | 786 | 202 | 1464 | 332 | 1986 | 1253 | 256 | 250 | 370 | 285 | 570 | 384 | 758 | 220 |
| 2σ | 11 | 17 | 17 | 10 | 24 | 12 | 26 | 22 | 11 | 11 | 12 | 11 | 15 | 13 | 17 | 10 |
| **Anal. No.** | **49** | **50** | **51** | **52** | **53** | **54** | **55** | **56** | **57** | **58** | **59** | **60** | **61** | **62** | **63** | **64** |
| P2O5 | 0.04 | 0.07 | 0.00 | 0.03 | 0.03 | 0.01 | 0.02 | 0.05 | 0.05 | 0.03 | 0.03 | 0.06 | 0.07 | 0.13 | 0.04 | 0.00 |
| UO2 | 67.62 | 64.23 | 86.28 | 86.47 | 85.45 | 86.17 | 85.14 | 87.26 | 82.19 | 85.69 | 85.94 | 87.10 | 79.18 | 76.24 | 80.58 | 84.67 |
| SiO2 | 2.78 | 2.11 | 1.70 | 1.87 | 3.12 | 1.92 | 2.34 | 1.64 | 3.15 | 2.85 | 2.59 | 2.34 | 2.54 | 2.39 | 3.75 | 2.01 |
| ZrO2 | 0.89 | 1.21 | 0.87 | 0.79 | 0.79 | 0.89 | 0.98 | 0.90 | 0.67 | 0.61 | 0.72 | 1.18 | 1.24 | 1.28 | 1.58 | 1.02 |
| TiO2 | 0.82 | 0.72 | 0.71 | 0.63 | 0.70 | 0.61 | 0.76 | 0.92 | 1.14 | 1.20 | 1.14 | 1.15 | 1.00 | 0.97 | 1.04 | 0.85 |
| Al2O3 | 0.80 | 0.47 | 0.32 | 0.31 | 0.52 | 0.33 | 0.41 | 0.24 | 0.38 | 0.40 | 0.38 | 0.30 | 0.44 | 0.53 | 0.40 | 0.21 |
| La2O3 | 0.12 | 0.16 | 0.29 | 0.20 | 0.19 | 0.22 | 0.21 | 0.14 | 0.10 | 0.25 | 0.16 | 0.22 | 0.21 | 0.14 | 0.14 | 0.31 |
| Ce2O3 | 0.71 | 0.58 | 1.27 | 1.13 | 1.12 | 1.16 | 1.30 | 0.84 | 0.90 | 1.28 | 1.02 | 1.15 | 1.21 | 1.02 | 0.93 | 1.68 |
| Pr2O3 | 0.08 | 0.09 | 0.09 | 0.06 | 0.07 | 0.10 | 0.05 | 0.10 | 0.08 | 0.11 | 0.10 | 0.07 | 0.06 | 0.05 | 0.07 | 0.16 |
| Nd2O3 | 0.53 | 0.64 | 0.82 | 0.81 | 0.76 | 0.82 | 0.86 | 0.57 | 0.69 | 0.85 | 0.75 | 0.81 | 0.89 | 0.75 | 0.65 | 1.05 |
| SmO | 0.05 | 0.11 | 0.13 | 0.12 | 0.10 | 0.12 | 0.14 | 0.07 | 0.10 | 0.14 | 0.08 | 0.12 | 0.12 | 0.14 | 0.12 | 0.20 |
| EuO | 0.07 | 0.05 | 0.14 | 0.10 | 0.10 | 0.09 | 0.13 | 0.02 | 0.04 | 0.06 | 0.03 | 0.10 | 0.06 | 0.04 | 0.08 | 0.17 |
| Gd2O3 | 0.28 | 0.25 | 0.13 | 0.02 | 0.14 | 0.23 | 0.21 | 0.21 | 0.22 | 0.30 | 0.17 | 0.26 | 0.19 | 0.11 | 0.20 | 0.15 |
| Dy2O3 | 0.12 | 0.10 | 0.09 | 0.11 | 0.11 | 0.11 | 0.14 | 0.12 | 0.21 | 0.17 | 0.16 | 0.22 | 0.18 | 0.22 | 0.19 | 0.11 |
| Ho2O3 | 0.00 | 0.00 | 0.00 | 0.04 | 0.02 | 0.02 | 0.00 | 0.00 | 0.05 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.03 | 0.16 |
| Y2O3 | 0.27 | 0.47 | 0.58 | 0.50 | 0.48 | 0.53 | 0.53 | 0.33 | 0.34 | 0.51 | 0.40 | 0.57 | 0.57 | 0.43 | 0.40 | 0.77 |
| FeO | 0.49 | 0.44 | 0.49 | 0.36 | 0.41 | 0.32 | 0.42 | 0.26 | 0.37 | 0.44 | 0.30 | 0.34 | 0.35 | 0.32 | 0.40 | 1.14 |
| CaO | 1.67 | 1.24 | 2.48 | 2.48 | 2.12 | 2.45 | 2.22 | 2.76 | 1.87 | 2.04 | 2.20 | 1.83 | 1.62 | 1.45 | 1.51 | 2.45 |
| Na2O | 0.22 | 0.17 | 0.00 | 0.02 | 0.01 | 0.01 | 0.02 | 0.06 | 0.16 | 0.15 | 0.14 | 0.02 | 0.00 | 0.00 | 0.04 | 0.00 |
| K2O | 0.34 | 0.31 | 0.22 | 0.27 | 0.28 | 0.22 | 0.24 | 0.26 | 0.35 | 0.28 | 0.33 | 0.24 | 0.22 | 0.21 | 0.25 | 0.19 |
| PbO | 18.52 | 21.31 | 3.15 | 3.59 | 3.18 | 3.60 | 3.64 | 3.16 | 6.28 | 2.58 | 3.31 | 1.80 | 8.37 | 11.71 | 6.65 | 2.70 |
| Total | 96.42 | 94.73 | 99.75 | 99.91 | 99.70 | 99.94 | 99.78 | 99.92 | 99.33 | 99.95 | 99.94 | 99.86 | 98.53 | 98.13 | 99.05 | 100.00 |
| Age (Ma) | 1709 | 1992 | 269 | 304 | 274 | 306 | 313 | 266 | 547 | 223 | 283 | 154 | 740 | 1041 | 588 | 236 |
| 2σ | 25 | 26 | 11 | 11 | 11 | 11 | 42 | 11 | 14 | 10 | 11 | 9 | 17 | 19 | 15 | 14 |
| **Anal. No.** | **65** | **66** | **67** | **68** | **69** | **70** | **71** | **72** | **73** | **74** | **75** | **76** | **77** | **78** | **79** | **80** |
| P2O5 | 0.12 | 0.05 | 0.00 | 0.05 | 0.03 | 0.00 | 0.02 | 0.00 | 0.02 | 0.00 | 0.03 | 0.00 | 0.03 | 0.12 | 0.00 | 0.00 |
| UO2 | 84.10 | 86.99 | 87.56 | 87.43 | 85.06 | 84.78 | 86.55 | 86.66 | 86.14 | 86.35 | 84.51 | 72.37 | 85.94 | 80.41 | 86.80 | 86.65 |
| SiO2 | 4.26 | 2.07 | 1.75 | 1.53 | 3.04 | 1.82 | 1.38 | 1.39 | 1.27 | 1.26 | 0.32 | 1.33 | 1.08 | 2.04 | 1.64 | 1.30 |
| ZrO2 | 0.63 | 0.69 | 0.70 | 0.78 | 1.49 | 0.47 | 0.52 | 0.54 | 0.45 | 0.43 | 0.40 | 0.92 | 0.71 | 0.53 | 0.53 | 0.60 |
| TiO2 | 0.53 | 0.45 | 0.50 | 0.45 | 0.87 | 1.20 | 1.19 | 0.77 | 0.73 | 0.61 | 0.66 | 0.74 | 1.00 | 0.82 | 0.66 | 0.70 |
| Al2O3 | 0.22 | 0.13 | 0.16 | 0.11 | 0.36 | 0.10 | 0.21 | 0.18 | 0.16 | 0.03 | 0.36 | 0.35 | 0.10 | 0.36 | 0.21 | 0.19 |
| La2O3 | 0.15 | 0.12 | 0.15 | 0.19 | 0.22 | 0.15 | 0.19 | 0.23 | 0.14 | 0.18 | 0.22 | 0.22 | 0.32 | 0.12 | 0.17 | 0.20 |
| Ce2O3 | 0.88 | 0.75 | 0.90 | 0.87 | 1.36 | 1.22 | 1.22 | 1.26 | 0.93 | 1.08 | 1.10 | 1.16 | 1.57 | 0.94 | 1.03 | 1.19 |
| Pr2O3 | 0.10 | 0.10 | 0.05 | 0.09 | 0.14 | 0.16 | 0.13 | 0.55 | 0.48 | 0.58 | 0.49 | 0.55 | 0.63 | 0.51 | 0.42 | 0.56 |
| Nd2O3 | 0.67 | 0.67 | 0.64 | 0.63 | 0.97 | 0.98 | 0.97 | 0.87 | 0.82 | 1.18 | 0.90 | 0.81 | 1.10 | 0.81 | 0.89 | 0.93 |
| SmO | 0.08 | 0.07 | 0.11 | 0.08 | 0.15 | 0.17 | 0.17 | 0.17 | 0.07 | 0.12 | 0.10 | 0.14 | 0.16 | 0.13 | 0.07 | 0.09 |
| EuO | 0.08 | 0.12 | 0.07 | 0.12 | 0.13 | 0.07 | 0.04 | 0.17 | 0.10 | 0.17 | 0.18 | 0.23 | 0.07 | 0.09 | 0.06 | 0.06 |
| Gd2O3 | 0.23 | 0.25 | 0.20 | 0.25 | 0.24 | 0.23 | 0.18 | 0.08 | 0.18 | 0.24 | 0.27 | 0.24 | 0.20 | 0.07 | 0.19 | 0.22 |
| Dy2O3 | 0.18 | 0.10 | 0.12 | 0.11 | 0.19 | 0.13 | 0.17 | 0.05 | 0.09 | 0.11 | 0.03 | 0.10 | 0.07 | 0.03 | 0.09 | 0.08 |
| Ho2O3 | 0.23 | 0.17 | 0.21 | 0.19 | 0.26 | 0.18 | 0.26 | 0.00 | 0.02 | 0.00 | 0.00 | 0.18 | 0.00 | 0.00 | 0.00 | 0.00 |
| Y2O3 | 0.46 | 0.43 | 0.41 | 0.42 | 0.70 | 0.51 | 0.53 | 0.62 | 0.47 | 0.54 | 0.56 | 0.59 | 0.66 | 0.43 | 0.58 | 0.61 |
| FeO | 0.36 | 0.33 | 0.26 | 0.27 | 0.57 | 0.65 | 0.77 | 0.41 | 0.30 | 0.27 | 0.33 | 0.37 | 0.58 | 0.58 | 0.28 | 0.27 |
| CaO | 2.28 | 2.20 | 2.52 | 2.49 | 1.51 | 2.04 | 2.22 | 1.67 | 1.65 | 1.64 | 2.57 | 1.94 | 1.96 | 1.88 | 2.21 | 2.29 |
| Na2O | 0.16 | 0.04 | 0.04 | 0.00 | 0.00 | 0.02 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| K2O | 0.28 | 0.23 | 0.22 | 0.19 | 0.18 | 0.20 | 0.20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| PbO | 3.72 | 3.92 | 3.38 | 3.69 | 2.37 | 4.67 | 2.42 | 3.65 | 5.04 | 4.36 | 5.04 | 14.76 | 2.96 | 8.16 | 3.97 | 3.91 |
| Total | 99.74 | 99.87 | 99.95 | 99.93 | 99.83 | 99.76 | 99.33 | 99.29 | 99.07 | 99.13 | 98.08 | 97.01 | 99.13 | 98.03 | 99.80 | 99.84 |
| Age (Ma) | 324 | 329 | 283 | 310 | 207 | 400 | 207 | 309 | 424 | 368 | 431 | 1335 | 254 | 713 | 334 | 330 |
| 2σ | 16 | 16 | 15 | 16 | 13 | 18 | 13 | 10 | 12 | 12 | 13 | 37 | 9 | 20 | 11 | 11 |