Appendix 1

| Grain No. | $^{206}Pb/^{238}U$ | | | $^{207}Pb/^{235}U$ | | | $^{238}U$-$^{206}Pb$ age (Ma) | | | $^{235}U$-$^{207}Pb$ age (Ma) | | | Th/U | 206Pbc |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nyunokawa Formation (Sample 141125-01) | | | | | | | | | | | | | | |
| Nyu-001 | 0.0298 | ± | 0.0009 | 0.2085 | ± | 0.0206 | 189.2 | ± | 5.5 | 192.3 | ± | 19.0 | 0.42 | 0.00 |
| *Nyu-002* | *0.0098* | ± | *0.0004* | *0.0728* | ± | *0.0111* | *63.0* | ± | *2.4* | *71.3* | ± | *10.9* | *0.58* | *1.82* |
| Nyu-003 | 0.0155 | ± | 0.0006 | 0.0981 | ± | 0.0152 | 99.0 | ± | 3.7 | 95.0 | ± | 14.7 | 0.37 | 1.34 |
| *Nyu-004* | *0.0112* | ± | *0.0006* | *0.1855* | ± | *0.0273* | *71.5* | ± | *3.5* | *172.8* | ± | *25.4* | *0.46* | *0.00* |
| *Nyu-005* | *0.0104* | ± | *0.0003* | *0.0771* | ± | *0.0062* | *66.7* | ± | *1.8* | *75.4* | ± | *6.0* | *0.52* | *1.86* |
| Nyu-006 | 0.0108 | ± | 0.0006 | 0.0798 | ± | 0.0199 | 69.0 | ± | 4.0 | 78.0 | ± | 19.5 | 0.97 | 0.00 |
| Nyu-007 | 0.0114 | ± | 0.0003 | 0.0764 | ± | 0.0089 | 72.8 | ± | 1.9 | 74.8 | ± | 8.7 | 0.65 | 3.96 |
| *Nyu-008* | *0.0102* | ± | *0.0003* | *0.0772* | ± | *0.0092* | *65.5* | ± | *1.8* | *75.5* | ± | *9.0* | *0.69* | *0.00* |
| *Nyu-009* | *0.0103* | ± | *0.0004* | *0.1042* | ± | *0.0162* | *66.2* | ± | *2.6* | *100.6* | ± | *15.7* | *0.54* | *4.17* |
| *Nyu-010* | *0.0108* | ± | *0.0003* | *0.0590* | ± | *0.0085* | *69.1* | ± | *2.0* | *58.2* | ± | *8.4* | *0.70* | *0.59* |
| *Nyu-011* | *0.0107* | ± | *0.0003* | *0.1044* | ± | *0.0107* | *68.8* | ± | *1.8* | *100.8* | ± | *10.3* | *0.74* | *0.00* |
| Nyu-012 | 0.0104 | ± | 0.0003 | 0.0666 | ± | 0.0089 | 66.7 | ± | 1.9 | 65.5 | ± | 8.7 | 1.00 | 0.84 |
| Nyu-013 | 0.0105 | ± | 0.0006 | 0.0668 | ± | 0.0183 | 67.1 | ± | 3.7 | 65.6 | ± | 18.0 | 0.65 | 4.27 |
| Nyu-014 | 0.0105 | ± | 0.0004 | 0.0733 | ± | 0.0086 | 67.0 | ± | 2.5 | 71.9 | ± | 8.5 | 0.72 | 1.15 |
| Nyu-015 | 0.0099 | ± | 0.0004 | 0.0626 | ± | 0.0078 | 63.5 | ± | 2.4 | 61.6 | ± | 7.6 | 0.83 | 5.94 |
| *Nyu-016* | *0.0105* | ± | *0.0004* | *0.6541* | ± | *0.0426* | *67.3* | ± | *2.6* | *511.0* | ± | *33.2* | *0.75* | *3.93* |
| Nyu-017 | 0.0124 | ± | 0.0006 | 0.0731 | ± | 0.0157 | 79.4 | ± | 4.0 | 71.6 | ± | 15.4 | 0.63 | 1.86 |
| Nyu-018 | 0.0098 | ± | 0.0004 | 0.0705 | ± | 0.0094 | 62.9 | ± | 2.5 | 69.2 | ± | 9.3 | 1.17 | 5.06 |
| Nyu-019 | 0.0102 | ± | 0.0004 | 0.0632 | ± | 0.0087 | 65.2 | ± | 2.6 | 62.3 | ± | 8.6 | 0.60 | 6.62 |
| Nyu-020 | 0.0102 | ± | 0.0005 | 0.0681 | ± | 0.0112 | 65.4 | ± | 2.9 | 66.9 | ± | 11.0 | 0.46 | 9.45 |
| *Nyu-021* | *0.0075* | ± | *0.0003* | *0.1763* | ± | *0.0210* | *48.2* | ± | *2.1* | *164.9* | ± | *19.6* | *1.69* | *0.00* |
| Nyu-022 | 0.0102 | ± | 0.0004 | 0.0679 | ± | 0.0097 | 65.6 | ± | 2.3 | 66.7 | ± | 9.5 | 1.02 | 0.00 |
| Nyu-023 | 0.0100 | ± | 0.0004 | 0.0623 | ± | 0.0102 | 64.4 | ± | 2.5 | 61.3 | ± | 10.1 | 0.62 | 0.00 |
| *Nyu-024* | *0.0098* | ± | *0.0003* | *0.0747* | ± | *0.0100* | *62.8* | ± | *2.2* | *73.2* | ± | *9.8* | *0.70* | *0.00* |
| Nyu-025 | 0.0106 | ± | 0.0004 | 0.0762 | ± | 0.0102 | 67.7 | ± | 2.4 | 74.5 | ± | 10.0 | 0.96 | 0.23 |
| Nyu-026 | 0.0105 | ± | 0.0004 | 0.0686 | ± | 0.0099 | 67.1 | ± | 2.4 | 67.4 | ± | 9.7 | 0.64 | 1.13 |
| Nyu-027 | 0.0103 | ± | 0.0004 | 0.0700 | ± | 0.0104 | 66.3 | ± | 2.4 | 68.7 | ± | 10.2 | 0.74 | 0.90 |
| *Nyu-028* | *0.0106* | ± | *0.0004* | *0.0934* | ± | *0.0117* | *67.8* | ± | *2.4* | *90.7* | ± | *11.3* | *0.62* | *0.00* |
| *Nyu-029* | *0.0108* | ± | *0.0005* | *0.1061* | ± | *0.0185* | *69.2* | ± | *3.2* | *102.3* | ± | *17.8* | *0.58* | *0.00* |
| *Nyu-030* | *0.0104* | ± | *0.0004* | *0.0970* | ± | *0.0129* | *66.7* | ± | *2.4* | *94.0* | ± | *12.5* | *0.82* | *0.00* |
| *Nyu-031* | *0.0105* | ± | *0.0004* | *0.0802* | ± | *0.0108* | *67.3* | ± | *2.3* | *78.3* | ± | *10.5* | *0.68* | *5.87* |
| Nyu-032 | 0.0105 | ± | 0.0003 | 0.0696 | ± | 0.0093 | 67.4 | ± | 2.2 | 68.3 | ± | 9.1 | 1.00 | 0.00 |
| Nyu-033 | 0.0103 | ± | 0.0003 | 0.0727 | ± | 0.0081 | 66.0 | ± | 2.0 | 71.2 | ± | 7.9 | 0.76 | 0.00 |
| *Nyu-034* | *0.0097* | ± | *0.0004* | *0.0833* | ± | *0.0135* | *62.5* | ± | *2.6* | *81.2* | ± | *13.2* | *1.00* | *0.00* |
| *Nyu-035* | *0.0099* | ± | *0.0005* | *0.0982* | ± | *0.0187* | *63.7* | ± | *3.2* | *95.1* | ± | *18.1* | *1.13* | *0.00* |
| Nyu-036 | 0.0135 | ± | 0.0004 | 0.0902 | ± | 0.0088 | 86.2 | ± | 2.8 | 87.7 | ± | 8.5 | 0.30 | 3.91 |
| *Nyu-037* | *0.0101* | ± | *0.0003* | *0.0720* | ± | *0.0071* | *65.0* | ± | *2.2* | *70.6* | ± | *7.0* | *1.13* | *0.00* |
| *Nyu-038* | *0.0100* | ± | *0.0004* | *0.0788* | ± | *0.0113* | *64.0* | ± | *2.6* | *77.0* | ± | *11.0* | *0.74* | *0.00* |
| Nyu-039 | 0.0133 | ± | 0.0006 | 0.0890 | ± | 0.0162 | 85.2 | ± | 3.9 | 86.6 | ± | 15.7 | 0.46 | 7.02 |
| *Nyu-040* | *0.0107* | ± | *0.0004* | *0.0997* | ± | *0.0129* | *68.5* | ± | *2.8* | *96.5* | ± | *12.5* | *0.54* | *5.01* |
| *Nyu-041* | *0.0113* | ± | *0.0007* | *0.1204* | ± | *0.0265* | *72.5* | ± | *4.5* | *115.4* | ± | *25.4* | *0.81* | *2.62* |
| Nyu-042 | 0.0096 | ± | 0.0005 | 0.0618 | ± | 0.0128 | 61.4 | ± | 3.0 | 60.9 | ± | 12.6 | 0.68 | 0.00 |
| *Nyu-043* | *0.0107* | ± | *0.0006* | *0.1196* | ± | *0.0221* | *68.5* | ± | *3.9* | *114.7* | ± | *21.1* | *0.81* | *0.00* |
| Nyu-044 | 0.0163 | ± | 0.0006 | 0.1092 | ± | 0.0116 | 104.1 | ± | 3.9 | 105.2 | ± | 11.2 | 0.19 | 1.32 |
| *Nyu-045* | *0.0114* | ± | *0.0008* | *0.1238* | ± | *0.0301* | *72.9* | ± | *5.0* | *118.5* | ± | *28.8* | *0.72* | *0.00* |
| Nyu-046 | 0.0140 | ± | 0.0006 | 0.0892 | ± | 0.0136 | 89.6 | ± | 3.9 | 86.8 | ± | 13.2 | 0.44 | 0.00 |
| Nyu-047 | 0.0108 | ± | 0.0005 | 0.0776 | ± | 0.0137 | 69.0 | ± | 3.3 | 75.9 | ± | 13.4 | 0.56 | 0.85 |
| *Nyu-048* | *0.0113* | ± | *0.0006* | *0.1004* | ± | *0.0169* | *72.3* | ± | *3.6* | *97.2* | ± | *16.4* | *0.40* | *0.00* |
| *Nyu-049* | *0.0104* | ± | *0.0004* | *0.0795* | ± | *0.0110* | *66.8* | ± | *2.9* | *77.7* | ± | *10.7* | *0.73* | *3.62* |
| *Nyu-050* | *0.0101* | ± | *0.0005* | *0.0805* | ± | *0.0156* | *64.5* | ± | *3.4* | *78.6* | ± | *15.2* | *0.67* | *2.09* |
| *Nyu-051* | *0.0156* | ± | *0.0008* | *0.2051* | ± | *0.0336* | *99.5* | ± | *5.1* | *189.4* | ± | *31.0* | *0.44* | *1.88* |
| *Nyu-052* | *0.0109* | ± | *0.0004* | *0.0879* | ± | *0.0131* | *70.2* | ± | *2.9* | *85.6* | ± | *12.7* | *0.74* | *6.78* |
| *Nyu-053* | *0.0096* | ± | *0.0006* | *0.1200* | ± | *0.0233* | *61.7* | ± | *3.6* | *115.1* | ± | *22.4* | *0.97* | *4.84* |
| *Nyu-054* | *0.0135* | ± | *0.0005* | *0.1291* | ± | *0.0144* | *86.3* | ± | *3.1* | *123.3* | ± | *13.7* | *0.50* | *0.00* |
| Nyu-055 | 0.0132 | ± | 0.0004 | 0.0880 | ± | 0.0069 | 84.6 | ± | 2.4 | 85.7 | ± | 6.7 | 0.37 | 0.50 |
| *Nyu-056* | *0.0140* | ± | *0.0005* | *0.1194* | ± | *0.0128* | *89.4* | ± | *3.1* | *114.6* | ± | *12.3* | *0.51* | *2.32* |
| *Nyu-057* | *0.0101* | ± | *0.0004* | *0.0756* | ± | *0.0092* | *65.1* | ± | *2.3* | *74.0* | ± | *9.0* | *0.72* | *0.36* |
| *Nyu-058* | *0.0154* | ± | *0.0009* | *0.1666* | ± | *0.0223* | *98.8* | ± | *5.6* | *156.5* | ± | *21.0* | *0.79* | *8.98* |
| Nyu-059 | 0.0115 | ± | 0.0006 | 0.0706 | ± | 0.0112 | 73.8 | ± | 4.1 | 69.3 | ± | 10.9 | 0.72 | 0.00 |
| Nyu-060 | 0.0113 | ± | 0.0006 | 0.0792 | ± | 0.0117 | 72.2 | ± | 4.0 | 77.4 | ± | 11.4 | 0.77 | 0.00 |
| *Nyu-061* | *0.0110* | ± | *0.0006* | *0.0837* | ± | *0.0086* | *70.4* | ± | *3.6* | *81.6* | ± | *8.4* | *0.79* | *1.48* |
| Nyu-062 | 0.0150 | ± | 0.0010 | 0.1062 | ± | 0.0253 | 96.2 | ± | 6.3 | 102.5 | ± | 24.4 | 0.39 | 0.00 |
| *Nyu-063* | *0.0141* | ± | *0.0007* | *0.0775* | ± | *0.0102* | *90.3* | ± | *4.7* | *75.8* | ± | *10.0* | *0.74* | *3.03* |
| *Nyu-064* | *0.0142* | ± | *0.0007* | *0.1493* | ± | *0.0131* | *90.7* | ± | *4.6* | *141.3* | ± | *12.4* | *0.50* | *2.72* |
| Nyu-065 | 0.0140 | ± | 0.0007 | 0.0976 | ± | 0.0122 | 89.5 | ± | 4.8 | 94.5 | ± | 11.8 | 0.83 | 0.00 |
| Nyu-066 | 0.0107 | ± | 0.0006 | 0.0634 | ± | 0.0125 | 68.6 | ± | 4.1 | 62.4 | ± | 12.3 | 0.95 | 0.00 |
| Nyu-067 | 0.0110 | ± | 0.0008 | 0.0814 | ± | 0.0209 | 70.6 | ± | 4.9 | 79.4 | ± | 20.4 | 0.76 | 0.00 |
| *Nyu-068* | *0.0086* | ± | *0.0006* | *0.1115* | ± | *0.0197* | *55.1* | ± | *3.6* | *107.4* | ± | *19.0* | *1.01* | *2.30* |
| *Nyu-069* | *0.0151* | ± | *0.0009* | *0.1399* | ± | *0.0232* | *96.4* | ± | *5.8* | *133.0* | ± | *22.0* | *0.50* | *0.00* |
| *Nyu-070* | *0.0129* | ± | *0.0008* | *0.3332* | ± | *0.0433* | *82.6* | ± | *5.2* | *292.0* | ± | *37.9* | *0.61* | *8.86* |
| *Nyu-071* | *0.0106* | ± | *0.0006* | *0.0849* | ± | *0.0127* | *67.9* | ± | *3.8* | *82.8* | ± | *12.4* | *0.64* | *1.75* |
| *Nyu-072* | *0.0117* | ± | *0.0006* | *0.0664* | ± | *0.0096* | *74.8* | ± | *3.5* | *65.3* | ± | *9.5* | *0.70* | *0.10* |
| *Nyu-073* | *0.0110* | ± | *0.0006* | *0.1688* | ± | *0.0196* | *70.5* | ± | *3.5* | *158.3* | ± | *18.4* | *0.88* | *0.00* |
| Nyu-074 | 0.0163 | ± | 0.0007 | 0.1038 | ± | 0.0125 | 104.3 | ± | 4.7 | 100.3 | ± | 12.1 | 0.67 | 0.00 |
| Nyu-075 | 0.0111 | ± | 0.0005 | 0.0721 | ± | 0.0098 | 71.3 | ± | 3.4 | 70.7 | ± | 9.6 | 0.73 | 2.07 |
| *Nyu-076* | *0.0115* | ± | *0.0004* | *0.0823* | ± | *0.0112* | *73.8* | ± | *2.6* | *80.3* | ± | *10.9* | *0.99* | *5.79* |
| *Nyu-077* | *0.0111* | ± | *0.0003* | *0.1172* | ± | *0.0102* | *71.3* | ± | *2.1* | *112.5* | ± | *9.8* | *0.89* | *0.43* |
| *Nyu-078* | *0.0111* | ± | *0.0003* | *0.0932* | ± | *0.0077* | *71.4* | ± | *1.9* | *90.5* | ± | *7.5* | *1.27* | *1.57* |
| *Nyu-079* | *0.0113* | ± | *0.0006* | *0.1130* | ± | *0.0239* | *72.4* | ± | *4.1* | *108.7* | ± | *23.0* | *0.91* | *0.00* |
| Nyu-080 | 0.0112 | ± | 0.0005 | 0.0769 | ± | 0.0162 | 71.7 | ± | 3.5 | 75.2 | ± | 15.8 | 0.79 | 3.79 |
| Nyu-081 | 0.0111 | ± | 0.0003 | 0.0723 | ± | 0.0084 | 70.9 | ± | 2.2 | 70.9 | ± | 8.2 | 0.65 | 2.23 |
| Nyu-082 | 0.0129 | ± | 0.0004 | 0.0845 | ± | 0.0082 | 82.5 | ± | 2.3 | 82.3 | ± | 8.0 | 0.73 | 1.78 |
| Nyu-083 | 0.0114 | ± | 0.0003 | 0.0736 | ± | 0.0053 | 73.2 | ± | 1.8 | 72.1 | ± | 5.2 | 0.64 | 1.77 |
| Nyu-084 | 0.0105 | ± | 0.0004 | 0.0703 | ± | 0.0092 | 67.5 | ± | 2.5 | 68.9 | ± | 9.0 | 0.75 | 1.39 |
| Nyu-085 | 0.0114 | ± | 0.0004 | 0.0735 | ± | 0.0086 | 73.1 | ± | 2.5 | 72.0 | ± | 8.4 | 0.60 | 0.00 |
| Nyu-086 | 0.0109 | ± | 0.0005 | 0.0750 | ± | 0.0154 | 69.6 | ± | 3.4 | 73.5 | ± | 15.1 | 1.33 | 0.98 |
| *Nyu-087* | *0.0106* | ± | *0.0004* | *0.0766* | ± | *0.0092* | *67.8* | ± | *2.4* | *75.0* | ± | *9.0* | *1.18* | *2.09* |
| *Nyu-088* | *0.0087* | ± | *0.0004* | *0.0769* | ± | *0.0151* | *55.8* | ± | *2.9* | *75.2* | ± | *14.8* | *1.08* | *0.00* |
| *Nyu-089* | *0.0124* | ± | *0.0006* | *0.0960* | ± | *0.0178* | *79.5* | ± | *3.7* | *93.1* | ± | *17.3* | *1.05* | *5.80* |
| *Nyu-090* | *0.0119* | ± | *0.0005* | *0.1186* | ± | *0.0150* | *76.4* | ± | *3.0* | *113.8* | ± | *14.4* | *0.75* | *0.00* |
| *Nyu-091* | *0.0177* | ± | *0.0007* | *0.0807* | ± | *0.0114* | *113.0* | ± | *4.5* | *78.8* | ± | *11.2* | *0.57* | *0.00* |
| *Nyu-092* | *0.0111* | ± | *0.0005* | *0.0807* | ± | *0.0096* | *71.4* | ± | *2.9* | *78.8* | ± | *9.4* | *0.62* | *1.81* |
| *Nyu-093* | *0.0106* | ± | *0.0004* | *0.0961* | ± | *0.0090* | *67.7* | ± | *2.6* | *93.1* | ± | *8.7* | *1.11* | *3.04* |
| *Nyu-094* | *0.0152* | ± | *0.0006* | *0.1119* | ± | *0.0106* | *97.4* | ± | *3.7* | *107.7* | ± | *10.2* | *0.70* | *2.53* |
| *Nyu-095* | *0.0112* | ± | *0.0004* | *0.0871* | ± | *0.0083* | *71.7* | ± | *2.7* | *84.8* | ± | *8.1* | *1.19* | *2.08* |
| *Nyu-096* | *0.0088* | ± | *0.0005* | *0.0868* | ± | *0.0149* | *56.7* | ± | *3.0* | *84.5* | ± | *14.5* | *1.27* | *2.57* |
| Nyu-097 | 0.0146 | ± | 0.0012 | 0.0906 | ± | 0.0153 | 93.6 | ± | 7.7 | 88.0 | ± | 14.8 | 0.46 | 0.00 |
| *Nyu-098* | *0.0115* | ± | *0.0009* | *0.2249* | ± | *0.0284* | *73.5* | ± | *6.1* | *206.0* | ± | *26.0* | *1.03* | *7.57* |
| *Nyu-099* | *0.0108* | ± | *0.0009* | *0.1173* | ± | *0.0188* | *69.5* | ± | *5.9* | *112.6* | ± | *18.0* | *0.33* | *1.17* |
| *Nyu-100* | *0.0111* | ± | *0.0009* | *0.1215* | ± | *0.0175* | *71.1* | ± | *5.9* | *116.5* | ± | *16.7* | *0.66* | *1.04* |
| *Nyu-101* | *0.0117* | ± | *0.0010* | *0.1418* | ± | *0.0201* | *75.3* | ± | *6.2* | *134.6* | ± | *19.1* | *0.68* | *6.42* |

Appendix 2

| Grain No. | $^{206}Pb/^{238}U$ | | $^{207}Pb/^{235}U$ | | $^{238}U$-$^{206}Pb$ age (Ma) | | $^{235}U$-$^{207}Pb$ age (Ma) | | Th/U | 206Pbc |
|---|---|---|---|---|---|---|---|---|---|---|
| *Nyu-102* | *0.0109* | *0.0011* | *0.1169* | *0.0336* | *70.2* | *7.1* | *112.2* | *32.3* | *0.70* | *0.00* |
| Nyu-103 | 0.0093 | 0.0008 | 0.0629 | 0.0093 | 59.8 | 4.9 | 61.9 | 9.1 | 0.54 | 0.00 |
| *Nyu-104* | *0.0106* | *0.0009* | *0.1572* | *0.0192* | *68.0* | *5.5* | *148.2* | *18.1* | *0.87* | *5.67* |
| *Nyu-105* | *0.0119* | *0.0007* | *0.1070* | *0.0171* | *76.4* | *4.5* | *103.2* | *16.5* | *0.88* | *0.81* |
| Nyu-106 | 0.0159 | 0.0009 | 0.0976 | 0.0175 | 101.8 | 5.8 | 94.5 | 16.9 | 0.91 | 0.00 |
| *Nyu-107* | *0.0140* | *0.0008* | *0.3034* | *0.0300* | *89.5* | *4.9* | *269.0* | *26.6* | *0.44* | *0.00* |
| Nyu-108 | 0.0144 | 0.0009 | 0.0863 | 0.0171 | 92.3 | 5.5 | 84.1 | 16.7 | 0.36 | 3.60 |
| Nyu-109 | 0.0106 | 0.0007 | 0.0832 | 0.0186 | 67.7 | 4.4 | 81.1 | 18.1 | 0.74 | 8.79 |
| Nyu-110 | 0.0109 | 0.0006 | 0.0790 | 0.0115 | 70.0 | 3.8 | 77.2 | 11.2 | 0.81 | 0.00 |
| Nyu-111 | 0.0105 | 0.0006 | 0.0698 | 0.0098 | 67.3 | 3.6 | 68.5 | 9.6 | 0.72 | 0.00 |
| *Nyu-112* | *0.0116* | *0.0006* | *0.1164* | *0.0152* | *74.5* | *4.1* | *111.8* | *14.6* | *0.66* | *0.00* |
| Nyu-113 | 0.0109 | 0.0004 | 0.0720 | 0.0152 | 69.9 | 2.3 | 70.6 | 8.0 | 0.74 | 2.08 |
| *Nyu-114* | *0.0116* | *0.0005* | *0.1753* | *0.0152* | *74.4* | *3.0* | *164.0* | *18.9* | *0.70* | *3.35* |
| Nyu-115 | 0.0125 | 0.0006 | 0.0917 | 0.0152 | 80.4 | 3.6 | 89.1 | 15.9 | 0.63 | 0.00 |
| *Nyu-116* | *0.0106* | *0.0008* | *0.1517* | *0.0152* | *68.0* | *5.3* | *143.4* | *37.4* | *0.68* | *0.00* |
| *Nyu-117* | *0.0111* | *0.0006* | *0.0960* | *0.0152* | *70.9* | *4.0* | *93.1* | *20.7* | *0.80* | *0.00* |
| Nyu-118 | 0.0105 | 0.0004 | 0.0708 | 0.0152 | 67.0 | 2.4 | 69.5 | 9.0 | 0.76 | 0.00 |
| *Nyu-119* | *0.0101* | *0.0004* | *0.0893* | *0.0152* | *64.5* | *2.4* | *86.8* | *11.0* | *0.70* | *0.69* |
| *Nyu-120* | *0.0122* | *0.0015* | *0.3426* | *0.0152* | *78.0* | *9.4* | *299.1* | *69.2* | *0.76* | *0.00* |
| Nyu-121 | 0.0119 | 0.0012 | 0.0850 | 0.0152 | 76.1 | 8.0 | 82.8 | 18.6 | 1.07 | 0.00 |
| *Nyu-122* | *0.0130* | *0.0013* | *0.0968* | *0.0152* | *83.1* | *8.4* | *93.9* | *16.4* | *0.49* | *3.28* |
| *Nyu-123* | *0.0131* | *0.0014* | *0.1206* | *0.0152* | *84.0* | *8.7* | *115.6* | *22.4* | *0.62* | *4.02* |
| Nyu-124 | 0.0107 | 0.0011 | 0.0716 | 0.0152 | 68.9 | 6.9 | 70.2 | 11.6 | 0.58 | 2.24 |
| *Nyu-125* | *0.0118* | *0.0013* | *0.1221* | *0.0152* | *75.9* | *8.1* | *117.0* | *22.6* | *0.59* | *1.37* |
| *Nyu-126* | *0.0094* | *0.0010* | *0.0817* | *0.0152* | *60.3* | *6.6* | *79.8* | *18.1* | *0.98* | *1.00* |
| *Nyu-127* | *0.0137* | *0.0004* | *0.0995* | *0.0152* | *87.5* | *2.5* | *96.3* | *8.4* | *0.45* | *0.72* |
| *Nyu-128* | *0.0113* | *0.0004* | *0.1320* | *0.0152* | *72.7* | *2.7* | *125.9* | *36.7* | *0.75* | *2.50* |
| *Nyu-129* | *0.0120* | *0.0005* | *0.1050* | *0.0152* | *77.0* | *3.3* | *101.4* | *13.8* | *0.45* | *2.70* |
| Nyu-130 | 0.0117 | 0.0005 | 0.0672 | 0.0152 | 74.9 | 3.4 | 66.1 | 12.5 | 1.06 | 5.46 |
| *Nyu-131* | *0.0140* | *0.0007* | *0.1078* | *0.0152* | *89.9* | *4.3* | *103.9* | *18.4* | *0.45* | *0.00* |
| *Nyu-132* | *0.0155* | *0.0006* | *0.2350* | *0.0152* | *98.9* | *3.9* | *214.3* | *19.7* | *0.49* | *8.11* |
| Nyu-133 | 0.0157 | 0.0005 | 0.1024 | 0.0152 | 100.2 | 3.5 | 99.0 | 9.2 | 0.44 | 0.75 |
| *Nyu-134* | *0.0153* | *0.0006* | *0.1164* | *0.0152* | *97.6* | *3.8* | *111.8* | *13.3* | *0.50* | *1.19* |
| *Nyu-135* | *0.0155* | *0.0006* | *0.0827* | *0.0152* | *98.8* | *4.0* | *80.7* | *12.2* | *0.70* | *0.00* |
| *Nyu-136* | *0.0132* | *0.0005* | *0.0976* | *0.0152* | *84.4* | *3.2* | *94.6* | *10.9* | *0.52* | *0.89* |
| *Nyu-137* | *0.0134* | *0.0006* | *0.1106* | *0.0152* | *85.9* | *3.6* | *106.5* | *14.3* | *0.69* | *2.13* |
| Nyu-138 | 0.0132 | 0.0005 | 0.0878 | 0.0152 | 84.4 | 2.9 | 85.4 | 7.5 | 0.52 | 0.00 |
| *Nyu-139* | *0.0109* | *0.0003* | *0.0672* | *0.0152* | *70.0* | *2.2* | *66.0* | *3.9* | *0.67* | *0.00* |
| Nyu-140 | 0.0107 | 0.0004 | 0.0754 | 0.0152 | 68.8 | 2.5 | 73.8 | 7.1 | 0.80 | 0.00 |
| *Nyu-141* | *0.0155* | *0.0019* | *0.1279* | *0.0152* | *99.0* | *12.4* | *122.2* | *25.1* | *0.44* | *0.39* |
| Nyu-142 | 0.0147 | 0.0007 | 0.0908 | 0.0152 | 93.8 | 4.7 | 88.2 | 8.9 | 0.89 | 0.00 |
| Nyu-143 | 0.0144 | 0.0008 | 0.1004 | 0.0152 | 92.2 | 5.3 | 97.1 | 10.8 | 0.42 | 2.86 |
| Nyu-144 | 0.0112 | 0.0012 | 0.0830 | 0.0152 | 71.6 | 7.9 | 81.0 | 15.2 | 0.65 | 0.23 |
| Nyu-145 | 0.0108 | 0.0009 | 0.0722 | 0.0152 | 69.1 | 5.5 | 70.8 | 10.3 | 0.88 | 2.89 |
| Nyu-146 | 0.0134 | 0.0015 | 0.0917 | 0.0152 | 86.1 | 9.4 | 89.1 | 16.7 | 0.50 | 0.07 |
| *Nyu-147* | *0.0127* | *0.0004* | *0.1207* | *0.0152* | *81.5* | *2.5* | *115.7* | *10.8* | *0.82* | *2.20* |
| *Nyu-148* | *0.0112* | *0.0005* | *0.1309* | *0.0152* | *71.7* | *3.0* | *124.9* | *17.1* | *1.09* | *0.00* |
| *Nyu-149* | *0.0099* | *0.0004* | *0.0894* | *0.0152* | *63.6* | *2.4* | *87.0* | *11.5* | *0.74* | *5.98* |
| Nyu-150 | 0.0143 | 0.0005 | 0.0877 | 0.0152 | 91.5 | 3.1 | 85.4 | 11.5 | 1.08 | 3.58 |
| *Nyu-151* | *0.0136* | *0.0005* | *0.1130* | *0.0152* | *87.0* | *3.4* | *108.7* | *15.8* | *0.83* | *3.16* |
| *Nyu-152* | *0.0159* | *0.0005* | *0.1171* | *0.0152* | *101.5* | *3.1* | *112.5* | *11.9* | *0.91* | *0.00* |

| Grain No. | $^{206}Pb/^{238}U$ | | $^{207}Pb/^{235}U$ | | $^{238}U$-$^{206}Pb$ age (Ma) | | $^{235}U$-$^{207}Pb$ age (Ma) | | Th/U | 206Pbc |
|---|---|---|---|---|---|---|---|---|---|---|
| *Nyu-153* | *0.0161* | *0.0006* | *0.1593* | *0.0193* | *102.8* | *3.8* | *150.1* | *18.2* | *0.51* | *0.14* |
| Nyu-154 | 0.0112 | 0.0004 | 0.0756 | 0.0095 | 71.5 | 2.4 | 74.0 | 9.3 | 1.08 | 4.91 |
| Nyu-155 | 0.0144 | 0.0005 | 0.0974 | 0.0115 | 91.9 | 3.0 | 94.3 | 11.2 | 0.66 | 0.00 |
| *Nyu-156* | *0.0139* | *0.0008* | *0.1422* | *0.0324* | *89.1* | *5.3* | *135.0* | *30.8* | *0.74* | *0.00* |
| Nyu-157 | 0.0151 | 0.0004 | 0.0954 | 0.0071 | 96.3 | 2.6 | 92.5 | 6.9 | 0.55 | 0.22 |
| *Nyu-158* | *0.0136* | *0.0004* | *0.1138* | *0.0105* | *86.8* | *2.6* | *109.4* | *10.1* | *0.62* | *3.64* |
| *Nyu-159* | *0.0122* | *0.0003* | *0.1025* | *0.0099* | *77.9* | *2.2* | *99.0* | *9.6* | *0.99* | *0.00* |
| *Nyu-160* | *0.0105* | *0.0005* | *0.0859* | *0.0163* | *67.3* | *3.3* | *83.6* | *15.9* | *0.68* | *0.00* |
| *Nyu-161* | *0.0166* | *0.0004* | *0.3300* | *0.0160* | *106.1* | *2.4* | *289.5* | *14.0* | *0.43* | *0.00* |
| Nyu-162 | 0.0110 | 0.0004 | 0.0782 | 0.0101 | 70.3 | 2.3 | 76.4 | 9.9 | 0.88 | 0.00 |
| *Nyu-163* | *0.0113* | *0.0003* | *0.0862* | *0.0081* | *72.2* | *2.0* | *83.9* | *7.9* | *1.37* | *0.00* |
| *Nyu-164* | *0.0105* | *0.0005* | *0.0924* | *0.0164* | *67.3* | *3.2* | *89.7* | *15.9* | *0.73* | *0.00* |
| *Nyu-165* | *0.0145* | *0.0005* | *0.1307* | *0.0145* | *92.5* | *3.0* | *124.7* | *13.9* | *0.38* | *0.00* |
| Nyu-166 | 0.0113 | 0.0008 | 0.0822 | 0.0226 | 72.7 | 4.9 | 80.2 | 22.1 | 0.93 | 0.00 |
| Nyu-167 | 0.0166 | 0.0006 | 0.1003 | 0.0161 | 106.2 | 4.1 | 97.0 | 15.5 | 0.82 | 6.43 |
| *Nyu-168* | *0.0110* | *0.0004* | *0.0942* | *0.0117* | *70.8* | *2.6* | *91.4* | *11.4* | *0.88* | *5.04* |
| Nyu-169 | 0.0150 | 0.0004 | 0.0963 | 0.0059 | 95.9 | 2.4 | 93.3 | 5.7 | 0.29 | 0.00 |
| *Nyu-170* | *0.0142* | *0.0004* | *0.1355* | *0.0109* | *91.0* | *2.7* | *129.0* | *10.4* | *0.72* | *3.29* |
| Nyu-171 | 0.0104 | 0.0003 | 0.0724 | 0.0078 | 66.4 | 2.1 | 71.0 | 7.6 | 0.57 | 1.85 |
| *Nyu-172* | *0.0110* | *0.0004* | *0.0839* | *0.0095* | *70.6* | *2.4* | *81.8* | *9.3* | *0.82* | *3.15* |
| *Nyu-173* | *0.0106* | *0.0003* | *0.0845* | *0.0083* | *68.3* | *2.1* | *82.4* | *8.0* | *1.26* | *2.34* |
| | | | | | Ryujin Formation (Sample 141123-03) | | | | | |
| Ryu-001 | 0.01192 | 0.00034 | 0.0747 | 0.0098 | 76.4 | 2.2 | 73.1 | 9.6 | 0.49 | 0.00 |
| *Ryu-002* | *0.01058* | *0.00030* | *0.1665* | *0.0144* | *67.8* | *1.9* | *156.3* | *13.6* | *0.69* | *4.06* |
| *Ryu-003* | *0.01083* | *0.00048* | *0.1001* | *0.0179* | *69.4* | *3.1* | *96.9* | *17.3* | *1.15* | *0.00* |
| Ryu-004 | 0.01372 | 0.00057 | 0.0800 | 0.0165 | 87.8 | 3.7 | 78.2 | 16.1 | 0.74 | 0.00 |
| *Ryu-005* | *0.01025* | *0.00025* | *0.1480* | *0.0112* | *65.7* | *1.6* | *140.1* | *10.6* | *1.10* | *4.51* |
| Ryu-006 | 0.00976 | 0.00028 | 0.0682 | 0.0084 | 62.6 | 1.8 | 66.9 | 8.2 | 1.25 | 0.00 |
| Ryu-007 | 0.01147 | 0.00040 | 0.0825 | 0.0124 | 73.5 | 2.5 | 80.5 | 12.1 | 0.85 | 0.00 |
| *Ryu-008* | *0.00955* | *0.00035* | *0.0759* | *0.0081* | *61.3* | *2.2* | *74.2* | *8.0* | *0.69* | *0.18* |
| Ryu-009 | 0.00970 | 0.00036 | 0.0671 | 0.0078 | 62.2 | 2.3 | 65.9 | 7.6 | 0.61 | 0.00 |
| *Ryu-010* | *0.01054* | *0.00041* | *0.1489* | *0.0148* | *67.6* | *2.6* | *140.9* | *14.0* | *0.46* | *8.65* |
| *Ryu-011* | *0.01008* | *0.00031* | *0.0803* | *0.0096* | *64.7* | *2.0* | *78.4* | *9.3* | *0.56* | *1.49* |
| *Ryu-012* | *0.00980* | *0.00030* | *0.0786* | *0.0093* | *62.8* | *1.9* | *76.9* | *9.1* | *0.62* | *0.45* |
| Ryu-013 | 0.01152 | 0.00028 | 0.0705 | 0.0066 | 73.8 | 1.8 | 69.2 | 6.5 | 0.34 | 0.95 |
| *Ryu-014* | *0.01059* | *0.00032* | *0.0625* | *0.0085* | *67.9* | *2.1* | *61.5* | *8.3* | *0.36* | *0.00* |
| Ryu-015 | 0.00962 | 0.00027 | 0.0674 | 0.0070 | 61.7 | 1.7 | 66.2 | 6.8 | 0.47 | 3.37 |
| *Ryu-016* | *0.01311* | *0.00028* | *0.1427* | *0.0070* | *84.0* | *1.8* | *135.4* | *6.6* | *0.44* | *4.39* |
| *Ryu-017* | *0.00920* | *0.00028* | *0.0838* | *0.0087* | *59.0* | *1.8* | *81.7* | *8.4* | *0.59* | *1.74* |
| Ryu-018 | 0.01214 | 0.00040 | 0.0864 | 0.0115 | 77.8 | 2.5 | 84.2 | 11.2 | 0.32 | 0.00 |
| *Ryu-019* | *0.01120* | *0.00046* | *0.0875* | *0.0156* | *71.8* | *3.0* | *85.2* | *15.2* | *0.39* | *0.00* |
| *Ryu-020* | *0.00976* | *0.00031* | *0.1562* | *0.0137* | *62.6* | *2.0* | *147.4* | *12.9* | *0.87* | *7.05* |
| *Ryu-021* | *0.00988* | *0.00033* | *0.1353* | *0.0118* | *63.4* | *2.1* | *128.8* | *11.3* | *0.66* | *5.93* |
| *Ryu-022* | *0.00974* | *0.00032* | *0.1018* | *0.0092* | *62.5* | *2.0* | *98.4* | *8.9* | *0.81* | *4.71* |
| *Ryu-023* | *0.00990* | *0.00038* | *0.0858* | *0.0110* | *63.5* | *2.4* | *83.5* | *10.7* | *0.54* | *0.67* |
| *Ryu-024* | *0.01061* | *0.00033* | *0.1937* | *0.0163* | *68.0* | *2.1* | *179.8* | *15.1* | *0.59* | *9.14* |
| *Ryu-025* | *0.00945* | *0.00026* | *0.0704* | *0.0069* | *60.6* | *1.7* | *69.1* | *6.8* | *0.68* | *1.32* |
| *Ryu-026* | *0.01544* | *0.00043* | *0.4795* | *0.0293* | *98.8* | *2.8* | *397.7* | *24.3* | *0.60* | *8.92* |
| *Ryu-027* | *0.01309* | *0.00036* | *0.1792* | *0.0139* | *83.9* | *2.3* | *167.4* | *13.0* | *0.39* | *2.63* |
| Ryu-028 | 0.01018 | 0.00030 | 0.0630 | 0.0075 | 65.3 | 1.9 | 62.0 | 7.4 | 0.38 | 0.00 |

Appendix 3

| Grain No. | $^{206}Pb/^{238}U$ | | $^{207}Pb/^{235}U$ | | $^{238}U-^{206}Pb$ age (Ma) | | $^{235}U-^{207}Pb$ age (Ma) | | Th/U | 206Pbc |
|---|---|---|---|---|---|---|---|---|---|---|
| Ryu-029 | 0.00947 | 0.00026 | 0.0644 | 0.0073 | 60.7 | 1.6 | 63.4 | 7.2 | 0.62 | 3.00 |
| Ryu-030 | 0.00941 | 0.00049 | 0.0706 | 0.0168 | 60.4 | 3.2 | 69.2 | 16.5 | 1.46 | 0.00 |
| *Ryu-031* | *0.00995* | *0.00032* | *0.1260* | *0.0135* | *63.8* | *2.0* | *120.5* | *12.9* | *0.57* | *9.04* |
| *Ryu-032* | *0.01087* | *0.00047* | *0.1551* | *0.0219* | *69.7* | *3.0* | *146.4* | *20.6* | *0.82* | *0.00* |
| *Ryu-033* | *0.00952* | *0.00031* | *0.0984* | *0.0113* | *61.1* | *2.0* | *95.3* | *11.0* | *0.60* | *1.29* |
| *Ryu-034* | *0.00888* | *0.00029* | *0.1190* | *0.0122* | *57.0* | *1.9* | *114.1* | *11.7* | *0.62* | *5.87* |
| Ryu-035 | 0.01047 | 0.00028 | 0.0713 | 0.0075 | 67.2 | 1.8 | 70.0 | 7.4 | 0.62 | 2.22 |
| Ryu-036 | 0.00995 | 0.00032 | 0.0693 | 0.0092 | 63.8 | 2.0 | 68.0 | 9.0 | 0.54 | 1.82 |
| *Ryu-037* | *0.03120* | *0.00068* | *0.3089* | *0.0227* | *198.1* | *4.3* | *273.3* | *20.1* | *0.87* | *4.63* |
| *Ryu-038* | *0.03451* | *0.00067* | *0.2564* | *0.0181* | *218.7* | *4.2* | *231.7* | *16.3* | *0.72* | *0.10* |
| *Ryu-039* | *0.01006* | *0.00037* | *0.1212* | *0.0132* | *64.5* | *2.4* | *116.1* | *12.6* | *0.56* | *4.37* |
| *Ryu-040* | *0.04024* | *0.00107* | *0.3230* | *0.0204* | *254.3* | *6.8* | *284.2* | *17.9* | *0.32* | *0.00* |
| Ryu-041 | 0.00959 | 0.00041 | 0.0660 | 0.0112 | 61.6 | 2.6 | 64.9 | 11.0 | 1.19 | 0.00 |
| Ryu-042 | 0.01349 | 0.00043 | 0.0925 | 0.0097 | 86.4 | 2.7 | 89.8 | 9.4 | 0.51 | 0.00 |
| *Ryu-043* | *0.00978* | *0.00045* | *0.0843* | *0.0145* | *62.7* | *2.9* | *82.1* | *14.1* | *1.30* | *0.00* |
| Ryu-044 | 0.01001 | 0.00034 | 0.0633 | 0.0078 | 64.2 | 2.2 | 62.3 | 7.7 | 0.62 | 2.89 |
| Ryu-045 | 0.01609 | 0.00057 | 0.1095 | 0.0140 | 102.9 | 3.7 | 105.5 | 13.5 | 0.47 | 0.55 |
| *Ryu-046* | *0.01340* | *0.00051* | *0.1053* | *0.0169* | *85.8* | *3.3* | *101.6* | *16.3* | *0.53* | *6.98* |
| Ryu-047 | 0.00970 | 0.00046 | 0.0693 | 0.0149 | 62.2 | 3.0 | 68.0 | 14.6 | 1.06 | 0.00 |
| Ryu-048 | 0.00932 | 0.00025 | 0.0637 | 0.0073 | 59.8 | 1.6 | 62.7 | 7.2 | 0.64 | 0.00 |
| Ryu-049 | 0.00970 | 0.00027 | 0.0651 | 0.0076 | 62.2 | 1.7 | 64.1 | 7.5 | 0.43 | 1.87 |
| *Ryu-050* | *0.01020* | *0.00030* | *0.0879* | *0.0102* | *65.4* | *1.9* | *85.6* | *9.9* | *0.57* | *0.34* |
| *Ryu-051* | *0.00890* | *0.00028* | *0.0715* | *0.0060* | *57.1* | *1.8* | *70.2* | *5.9* | *0.50* | *2.84* |
| *Ryu-052* | *0.01026* | *0.00038* | *0.0803* | *0.0097* | *65.8* | *2.4* | *78.4* | *9.5* | *1.16* | *0.00* |
| Ryu-053 | 0.00978 | 0.00033 | 0.0630 | 0.0067 | 62.7 | 2.1 | 62.0 | 6.6 | 0.60 | 0.00 |
| Ryu-054 | 0.01383 | 0.00029 | 0.0896 | 0.0071 | 88.5 | 1.9 | 87.2 | 6.9 | 0.54 | 1.30 |
| Ryu-055 | 0.00973 | 0.00030 | 0.0628 | 0.0086 | 62.4 | 2.0 | 61.9 | 8.4 | 0.44 | 0.00 |
| *Ryu-056* | *0.35936* | *0.00591* | *6.3042* | *0.2314* | *1979.1* | *32.5* | *2019.0* | *74.1* | *0.31* | *0.63* |
| *Ryu-057* | *0.00978* | *0.00031* | *0.0825* | *0.0100* | *62.7* | *2.0* | *80.5* | *9.8* | *0.61* | *2.82* |
| Ryu-058 | 0.00960 | 0.00029 | 0.0673 | 0.0085 | 61.6 | 1.9 | 66.2 | 8.3 | 0.57 | 1.47 |
| Ryu-059 | 0.00950 | 0.00026 | 0.0607 | 0.0068 | 60.9 | 1.6 | 59.8 | 6.7 | 0.66 | 0.00 |
| Ryu-060 | 0.00920 | 0.00033 | 0.0540 | 0.0088 | 59.1 | 2.1 | 53.4 | 8.7 | 0.62 | 0.00 |
| Ryu-061 | 0.00953 | 0.00025 | 0.0641 | 0.0063 | 61.1 | 1.6 | 63.1 | 6.2 | 0.45 | 0.00 |
| *Ryu-062* | *0.00976* | *0.00024* | *0.0777* | *0.0064* | *62.6* | *1.6* | *76.0* | *6.3* | *0.65* | *0.45* |
| Ryu-063 | 0.01640 | 0.00044 | 0.1137 | 0.0111 | 104.9 | 2.8 | 109.3 | 10.7 | 0.46 | 0.00 |
| Ryu-064 | 0.01049 | 0.00048 | 0.0704 | 0.0145 | 67.3 | 3.1 | 69.1 | 14.2 | 1.01 | 2.72 |
| *Ryu-065* | *0.01005* | *0.00052* | *0.9617* | *0.0910* | *64.5* | *3.3* | *684.2* | *64.7* | *1.50* | *0.00* |
| Ryu-066 | 0.01227 | 0.00048 | 0.0916 | 0.0144 | 78.6 | 3.1 | 89.0 | 14.0 | 1.53 | 0.00 |
| Ryu-067 | 0.00966 | 0.00036 | 0.0641 | 0.0098 | 62.0 | 2.3 | 63.1 | 9.6 | 0.55 | 0.08 |
| *Ryu-068* | *0.01670* | *0.00046* | *0.1212* | *0.0114* | *106.7* | *3.0* | *116.2* | *10.9* | *0.33* | *0.46* |
| Ryu-069 | 0.01025 | 0.00038 | 0.0710 | 0.0106 | 65.8 | 2.4 | 69.6 | 10.4 | 0.64 | 0.00 |
| Ryu-070 | 0.01045 | 0.00049 | 0.0631 | 0.0140 | 67.0 | 3.1 | 62.1 | 13.8 | 0.61 | 1.10 |
| Ryu-071 | 0.01010 | 0.00042 | 0.0703 | 0.0122 | 64.8 | 2.7 | 69.0 | 12.0 | 1.13 | 5.37 |
| Ryu-072 | 0.01078 | 0.00053 | 0.0635 | 0.0153 | 69.1 | 3.4 | 62.5 | 15.0 | 0.97 | 0.00 |
| *Ryu-073* | *0.01246* | *0.00060* | *0.2454* | *0.0331* | *79.8* | *3.8* | *222.9* | *30.1* | *0.60* | *8.49* |
| *Ryu-074* | *0.01058* | *0.00063* | *0.2209* | *0.0373* | *67.8* | *4.1* | *202.7* | *34.2* | *1.09* | *0.00* |
| Ryu-075 | 0.01001 | 0.00025 | 0.0666 | 0.0056 | 64.2 | 1.6 | 65.5 | 5.5 | 0.52 | 0.00 |
| *Ryu-076* | *0.00960* | *0.00034* | *0.0702* | *0.0096* | *61.6* | *2.2* | *68.9* | *9.4* | *0.49* | *0.00* |
| *Ryu-077* | *0.01021* | *0.00034* | *0.0911* | *0.0107* | *65.5* | *2.2* | *88.5* | *10.3* | *0.58* | *0.00* |
| *Ryu-078* | *0.01048* | *0.00060* | *0.1620* | *0.0202* | *67.2* | *3.8* | *152.5* | *19.0* | *0.75* | *7.59* |
| Ryu-079 | 0.01003 | 0.00057 | 0.0738 | 0.0118 | 64.3 | 3.6 | 72.3 | 11.6 | 0.64 | 7.34 |

| Grain No. | $^{206}Pb/^{238}U$ | | $^{207}Pb/^{235}U$ | | $^{238}U-^{206}Pb$ age (Ma) | | $^{235}U-^{207}Pb$ age (Ma) | | Th/U | 206Pbc |
|---|---|---|---|---|---|---|---|---|---|---|
| Ryu-080 | 0.01002 | 0.00052 | 0.0666 | 0.0085 | 64.2 | 3.3 | 65.5 | 8.4 | 0.66 | 4.00 |
| Ryu-081 | 0.01195 | 0.00058 | 0.0778 | 0.0072 | 76.6 | 3.7 | 76.0 | 7.0 | 0.51 | 0.00 |
| Ryu-082 | 0.00993 | 0.00053 | 0.0709 | 0.0096 | 63.7 | 3.4 | 69.6 | 9.4 | 0.49 | 0.00 |
| *Ryu-083* | *0.01660* | *0.00082* | *0.1215* | *0.0119* | *106.1* | *5.2* | *116.4* | *11.4* | *0.50* | *0.31* |
| *Ryu-084* | *0.01035* | *0.00054* | *0.0823* | *0.0101* | *66.4* | *3.5* | *80.3* | *9.9* | *0.79* | *1.98* |
| *Ryu-085* | *0.01282* | *0.00062* | *0.1109* | *0.0094* | *82.1* | *4.0* | *106.8* | *9.0* | *0.63* | *0.05* |
| Ryu-086 | 0.04158 | 0.00208 | 0.3051 | 0.0317 | 262.6 | 13.1 | 270.4 | 28.1 | 0.59 | 0.00 |
| Ryu-087 | 0.01204 | 0.00063 | 0.0797 | 0.0101 | 77.2 | 4.0 | 77.9 | 9.9 | 0.52 | 0.00 |
| *Ryu-088* | *0.01381* | *0.00071* | *0.2146* | *0.0195* | *88.4* | *4.5* | *197.4* | *18.0* | *0.40* | *9.49* |
| *Ryu-089* | *0.01026* | *0.00058* | *0.0915* | *0.0135* | *65.8* | *3.7* | *88.9* | *13.1* | *1.05* | *6.34* |
| Ryu-090 | 0.00997 | 0.00054 | 0.0724 | 0.0100 | 63.9 | 3.4 | 71.0 | 9.8 | 0.58 | 0.00 |
| Ryu-091 | 0.01243 | 0.00068 | 0.0768 | 0.0120 | 79.6 | 4.4 | 75.1 | 11.8 | 0.57 | 0.00 |
| Ryu-092 | 0.00935 | 0.00050 | 0.0656 | 0.0092 | 60.0 | 3.2 | 64.5 | 9.0 | 0.70 | 4.21 |
| Ryu-093 | 0.34881 | 0.01104 | 5.5247 | 0.2603 | 1928.9 | 61.0 | 1904.4 | 89.7 | 0.28 | 0.00 |
| *Ryu-094* | *0.01648* | *0.00060* | *0.1243* | *0.0116* | *105.4* | *3.8* | *119.0* | *11.1* | *0.33* | *2.32* |
| *Ryu-095* | *0.01138* | *0.00066* | *0.1719* | *0.0295* | *73.0* | *4.3* | *161.1* | *27.7* | *0.81* | *0.00* |
| Ryu-096 | 0.00869 | 0.00038 | 0.0617 | 0.0091 | 55.8 | 2.4 | 60.8 | 8.9 | 1.87 | 3.54 |
| Ryu-097 | 0.01266 | 0.00055 | 0.0864 | 0.0131 | 81.1 | 3.5 | 84.1 | 12.8 | 1.08 | 1.40 |
| *Ryu-098* | *0.01218* | *0.00061* | *0.0983* | *0.0177* | *78.1* | *3.9* | *95.2* | *17.2* | *1.00* | *5.49* |
| Ryu-099 | 0.00931 | 0.00046 | 0.0591 | 0.0115 | 59.7 | 2.9 | 58.3 | 11.3 | 1.28 | 0.00 |
| Ryu-100 | 0.01333 | 0.00062 | 0.0859 | 0.0107 | 85.3 | 4.0 | 83.7 | 10.4 | 0.51 | 0.00 |
| *Ryu-101* | *0.01000* | *0.00043* | *0.0842* | *0.0069* | *64.1* | *2.7* | *82.1* | *6.7* | *1.01* | *1.97* |
| Ryu-102 | 0.30887 | 0.01265 | 4.6875 | 0.2649 | 1735.1 | 71.1 | 1764.9 | 99.7 | 0.51 | 0.00 |
| Ryu-103 | 0.34660 | 0.01403 | 5.5701 | 0.2937 | 1918.3 | 77.7 | 1911.4 | 100.8 | 0.18 | 0.00 |
| Ryu-104 | 0.01020 | 0.00064 | 0.0782 | 0.0177 | 65.4 | 4.1 | 76.4 | 17.3 | 1.23 | 3.28 |
| Ryu-105 | 0.01016 | 0.00049 | 0.0667 | 0.0091 | 65.2 | 3.1 | 65.6 | 9.0 | 0.54 | 0.00 |
| Ryu-106 | 0.01040 | 0.00050 | 0.0737 | 0.0096 | 66.7 | 3.2 | 72.2 | 9.4 | 0.87 | 0.00 |
| *Ryu-107* | *0.01270* | *0.00072* | *0.1010* | *0.0157* | *81.4* | *4.6* | *97.7* | *15.2* | *0.88* | *0.00* |
| *Ryu-108* | *0.00983* | *0.00052* | *0.0866* | *0.0103* | *63.1* | *3.3* | *84.4* | *10.0* | *0.64* | *3.03* |
| Ryu-109 | 0.01113 | 0.00079 | 0.0803 | 0.0207 | 71.3 | 5.1 | 78.4 | 20.2 | 1.26 | 0.00 |
| *Ryu-110* | *0.01605* | *0.00055* | *0.2800* | *0.0186* | *102.6* | *3.5* | *250.7* | *16.7* | *0.42* | *7.75* |
| Ryu-111 | 0.00966 | 0.00038 | 0.0580 | 0.0078 | 62.0 | 2.4 | 57.3 | 7.7 | 0.56 | 0.00 |
| *Ryu-112* | *0.00928* | *0.00030* | *0.1295* | *0.0082* | *59.6* | *2.0* | *123.7* | *7.8* | *1.65* | *6.91* |
| *Ryu-113* | *0.00994* | *0.00039* | *0.0735* | *0.0094* | *63.8* | *2.5* | *72.0* | *9.2* | *0.61* | *0.00* |
| Ryu-114 | 0.01082 | 0.00051 | 0.0713 | 0.0132 | 69.4 | 3.3 | 69.9 | 12.9 | 1.13 | 3.57 |
| *Ryu-115* | *0.00993* | *0.00038* | *0.0802* | *0.0090* | *63.7* | *2.4* | *78.3* | *8.8* | *0.48* | *1.52* |
| *Ryu-116* | *0.37052* | *0.01153* | *5.3624* | *0.2757* | *2031.8* | *63.2* | *1878.8* | *96.6* | *0.35* | *0.20* |
| *Ryu-117* | *0.01065* | *0.00038* | *0.1540* | *0.0146* | *68.3* | *2.4* | *145.5* | *13.8* | *0.46* | *6.66* |
| *Ryu-118* | *0.00961* | *0.00032* | *0.0694* | *0.0076* | *61.7* | *2.1* | *68.1* | *7.5* | *0.48* | *0.00* |
| *Ryu-119* | *0.01026* | *0.00057* | *0.0853* | *0.0187* | *65.8* | *3.7* | *83.1* | *18.2* | *0.82* | *6.86* |
| *Ryu-120* | *0.00938* | *0.00034* | *0.0719* | *0.0087* | *60.2* | *2.2* | *70.5* | *8.5* | *1.18* | *0.00* |
| *Ryu-121* | *0.01108* | *0.00040* | *0.1562* | *0.0151* | *71.0* | *2.5* | *147.3* | *14.3* | *0.91* | *9.69* |
| *Ryu-122* | *0.01844* | *0.00066* | *0.1394* | *0.0173* | *117.8* | *4.2* | *132.5* | *16.5* | *0.95* | *0.00* |
| Ryu-123 | 0.03862 | 0.00099 | 0.2694 | 0.0157 | 244.3 | 6.2 | 242.2 | 14.1 | 0.82 | 0.00 |
| Ryu-124 | 0.34410 | 0.00884 | 5.5930 | 0.2723 | 1906.4 | 48.9 | 1915.0 | 93.2 | 0.62 | 0.00 |
| Ryu-125 | 0.09481 | 0.00234 | 0.7693 | 0.0370 | 583.9 | 14.4 | 579.3 | 27.9 | 0.27 | 0.00 |
| *Ryu-126* | *0.01191* | *0.00040* | *0.0918* | *0.0105* | *76.3* | *2.6* | *89.1* | *10.2* | *0.46* | *1.32* |
| Ryu-127 | 0.01361 | 0.00067 | 0.0887 | 0.0187 | 87.2 | 4.3 | 86.3 | 18.2 | 0.49 | 0.00 |
| *Ryu-128* | *0.01063* | *0.00058* | *0.1350* | *0.0240* | *68.1* | *3.7* | *128.6* | *22.8* | *0.86* | *0.00* |
| Ryu-129 | 0.01305 | 0.00056 | 0.0913 | 0.0155 | 83.6 | 3.6 | 88.7 | 15.1 | 0.57 | 0.00 |
| *Ryu-130* | *0.00973* | *0.00026* | *0.0573* | *0.0056* | *62.4* | *1.7* | *56.6* | *5.5* | *0.51* | *0.00* |

Appendix 4

| Grain No. | $^{206}Pb/^{238}U$ | | | $^{207}Pb/^{235}U$ | | | $^{238}U$-$^{206}Pb$ age (Ma) | | | $^{235}U$-$^{207}Pb$ age (Ma) | | | Th/U | 206Pbc |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Ryu-131* | *0.01043* | ± | *0.00035* | *0.0972* | ± | *0.0110* | *66.9* | ± | *2.2* | *94.2* | ± | *10.7* | *0.59* | *1.75* |
| *Ryu-132* | *0.01047* | ± | *0.00057* | *0.1477* | ± | *0.0260* | *67.1* | ± | *3.7* | *139.9* | ± | *24.7* | *1.21* | *0.00* |
| *Ryu-133* | *0.01068* | ± | *0.00039* | *0.0571* | ± | *0.0094* | *68.5* | ± | *2.5* | *56.3* | ± | *9.3* | *0.49* | *1.45* |
| *Ryu-134* | *0.01097* | ± | *0.00045* | *0.1072* | ± | *0.0157* | *70.3* | ± | *2.9* | *103.4* | ± | *15.1* | *1.17* | *5.39* |
| Ryu-135 | 0.00935 | ± | 0.00025 | 0.0633 | ± | 0.0055 | 60.0 | ± | 1.6 | 62.3 | ± | 5.4 | 0.81 | 1.32 |
| *Ryu-136* | *0.01001* | ± | *0.00027* | *0.0797* | ± | *0.0069* | *64.2* | ± | *1.7* | *77.9* | ± | *6.7* | *0.82* | *1.85* |
| *Ryu-137* | *0.01266* | ± | *0.00031* | *0.1052* | ± | *0.0102* | *81.1* | ± | *2.0* | *101.6* | ± | *9.9* | *0.42* | *0.00* |
| Ryu-138 | 0.00992 | ± | 0.00026 | 0.0663 | ± | 0.0077 | 63.6 | ± | 1.7 | 65.2 | ± | 7.6 | 0.62 | 1.69 |
| Ryu-139 | 0.01587 | ± | 0.00053 | 0.1091 | ± | 0.0167 | 101.5 | ± | 3.4 | 105.1 | ± | 16.1 | 0.45 | 0.74 |
| *Ryu-140* | *0.01005* | ± | *0.00037* | *0.0777* | ± | *0.0127* | *64.4* | ± | *2.4* | *75.9* | ± | *12.4* | *0.58* | *3.98* |
| *Ryu-141* | *0.01172* | ± | *0.00048* | *0.2321* | ± | *0.0281* | *75.1* | ± | *3.1* | *211.9* | ± | *25.6* | *1.00* | *7.59* |
| *Ryu-142* | *0.01015* | ± | *0.00046* | *0.1013* | ± | *0.0186* | *65.1* | ± | *2.9* | *98.0* | ± | *17.9* | *0.84* | *7.11* |
| | | | | Otonashigawa Group (Sample 141123-01) | | | | | | | | | | |
| *Oto-001* | *0.00741* | ± | *0.00036* | *0.0751* | ± | *0.0135* | *47.6* | ± | *2.3* | *73.5* | ± | *13.2* | *1.86* | *0.00* |
| *Oto-002* | *0.00742* | ± | *0.00060* | *0.2813* | ± | *0.0535* | *47.7* | ± | *3.8* | *251.7* | ± | *47.9* | *1.24* | *0.00* |
| Oto-003 | 0.00861 | ± | 0.00039 | 0.0598 | ± | 0.0116 | 55.3 | ± | 2.5 | 59.0 | ± | 11.4 | 1.71 | 0.00 |
| *Oto-004* | *0.00740* | ± | *0.00034* | *0.0836* | ± | *0.0131* | *47.5* | ± | *2.2* | *81.6* | ± | *12.8* | *1.11* | *1.63* |
| *Oto-005* | *0.00817* | ± | *0.00053* | *0.0712* | ± | *0.0192* | *52.5* | ± | *3.4* | *69.8* | ± | *18.9* | *1.39* | *0.00* |
| Oto-006 | 0.00871 | ± | 0.00028 | 0.0615 | ± | 0.0071 | 55.9 | ± | 1.8 | 60.6 | ± | 7.0 | 0.90 | 0.74 |
| Oto-007 | 0.00923 | ± | 0.00047 | 0.0575 | ± | 0.0136 | 59.2 | ± | 3.0 | 56.8 | ± | 13.4 | 0.75 | 0.88 |
| Oto-008 | 0.00748 | ± | 0.00034 | 0.0472 | ± | 0.0099 | 48.0 | ± | 2.2 | 46.8 | ± | 9.8 | 0.86 | 7.65 |
| Oto-009 | 0.00804 | ± | 0.00042 | 0.0581 | ± | 0.0131 | 51.6 | ± | 2.7 | 57.3 | ± | 13.0 | 1.25 | 0.00 |
| Oto-010 | 0.00783 | ± | 0.00032 | 0.0522 | ± | 0.0089 | 50.3 | ± | 2.0 | 51.7 | ± | 8.8 | 1.40 | 5.52 |
| *Oto-011* | *0.01624* | ± | *0.00051* | *0.0949* | ± | *0.0118* | *103.9* | ± | *3.2* | *92.1* | ± | *11.4* | *0.37* | *0.00* |
| Oto-012 | 0.01437 | ± | 0.00042 | 0.0908 | ± | 0.0099 | 91.9 | ± | 2.7 | 88.2 | ± | 9.6 | 0.17 | 0.00 |
| *Oto-013* | *0.00995* | ± | *0.00027* | *0.0589* | ± | *0.0048* | *63.8* | ± | *1.8* | *58.1* | ± | *4.7* | *1.69* | *0.00* |
| *Oto-014* | *0.00864* | ± | *0.00058* | *0.1320* | ± | *0.0282* | *55.5* | ± | *3.7* | *125.9* | ± | *26.9* | *0.98* | *0.00* |
| Oto-015 | 0.00842 | ± | 0.00044 | 0.0624 | ± | 0.0137 | 54.1 | ± | 2.8 | 61.5 | ± | 13.5 | 0.86 | 3.01 |
| *Oto-016* | *0.00877* | ± | *0.00040* | *0.1480* | ± | *0.0193* | *56.3* | ± | *2.6* | *140.1* | ± | *18.3* | *1.55* | *0.00* |
| Oto-017 | 0.00806 | ± | 0.00044 | 0.0542 | ± | 0.0130 | 51.8 | ± | 2.8 | 53.6 | ± | 12.8 | 1.10 | 8.63 |
| Oto-018 | 0.00912 | ± | 0.00054 | 0.0646 | ± | 0.0168 | 58.5 | ± | 3.5 | 63.6 | ± | 16.5 | 0.97 | 7.83 |
| *Oto-019* | *0.00800* | ± | *0.00035* | *0.0599* | ± | *0.0101* | *51.3* | ± | *2.2* | *59.0* | ± | *10.0* | *1.05* | *0.80* |
| *Oto-020* | *0.00796* | ± | *0.00053* | *0.0820* | ± | *0.0211* | *51.1* | ± | *3.4* | *80.0* | ± | *20.6* | *1.39* | *0.00* |
| *Oto-021* | *0.00805* | ± | *0.00037* | *0.0622* | ± | *0.0122* | *51.7* | ± | *2.4* | *61.3* | ± | *12.1* | *1.36* | *0.00* |
| Oto-022 | 0.00917 | ± | 0.00038 | 0.0652 | ± | 0.0120 | 58.8 | ± | 2.4 | 64.1 | ± | 11.8 | 0.63 | 0.00 |
| *Oto-023* | *0.00953* | ± | *0.00090* | *0.5936* | ± | *0.1142* | *61.2* | ± | *5.8* | *473.1* | ± | *91.0* | *1.29* | *0.00* |
| *Oto-024* | *0.00774* | ± | *0.00029* | *0.0584* | ± | *0.0093* | *49.7* | ± | *1.9* | *57.6* | ± | *9.2* | *1.76* | *0.00* |
| Oto-025 | 0.01307 | ± | 0.00034 | 0.0813 | ± | 0.0089 | 83.7 | ± | 2.2 | 79.4 | ± | 8.7 | 0.59 | 0.00 |
| *Oto-026* | *0.01302* | ± | *0.00035* | *0.0943* | ± | *0.0101* | *83.4* | ± | *2.2* | *91.5* | ± | *9.8* | *0.39* | *0.29* |
| *Oto-027* | *0.01402* | ± | *0.00046* | *0.1249* | ± | *0.0105* | *89.7* | ± | *2.9* | *119.5* | ± | *10.1* | *0.68* | *0.59* |
| Oto-028 | 0.00820 | ± | 0.00054 | 0.0621 | ± | 0.0174 | 52.6 | ± | 3.5 | 61.2 | ± | 17.1 | 2.05 | 3.91 |
| *Oto-029* | *0.01146* | ± | *0.00045* | *0.0667* | ± | *0.0098* | *73.5* | ± | *2.9* | *65.6* | ± | *9.6* | *0.96* | *4.24* |
| *Oto-030* | *0.01125* | ± | *0.00065* | *0.2096* | ± | *0.0338* | *72.1* | ± | *4.2* | *193.2* | ± | *31.1* | *0.82* | *0.00* |
| *Oto-031* | *0.00764* | ± | *0.00037* | *0.0602* | ± | *0.0110* | *49.1* | ± | *2.4* | *59.3* | ± | *10.8* | *1.06* | *9.12* |
| *Oto-032* | *0.00835* | ± | *0.00034* | *0.0727* | ± | *0.0118* | *53.6* | ± | *2.2* | *71.2* | ± | *11.6* | *1.60* | *0.00* |
| *Oto-033* | *0.00841* | ± | *0.00028* | *0.0460* | ± | *0.0073* | *54.0* | ± | *1.8* | *45.6* | ± | *7.3* | *0.53* | *5.79* |
| Oto-034 | 0.00842 | ± | 0.00034 | 0.0597 | ± | 0.0107 | 54.0 | ± | 2.2 | 58.9 | ± | 10.5 | 1.45 | 8.37 |
| Oto-035 | 0.34426 | ± | 0.00496 | 5.4458 | ± | 0.1678 | 1907.1 | ± | 27.5 | 1892.0 | ± | 58.3 | 0.09 | 0.00 |
| *Oto-036* | *0.00764* | ± | *0.00038* | *0.0393* | ± | *0.0102* | *49.1* | ± | *2.4* | *39.1* | ± | *10.1* | *1.68* | *5.54* |
| *Oto-037* | *0.00780* | ± | *0.00037* | *0.0952* | ± | *0.0159* | *50.1* | ± | *2.4* | *92.3* | ± | *15.4* | *0.95* | *5.02* |

| Grain No. | $^{206}Pb/^{238}U$ | | | $^{207}Pb/^{235}U$ | | | $^{238}U$-$^{206}Pb$ age (Ma) | | | $^{235}U$-$^{207}Pb$ age (Ma) | | | Th/U | 206Pbc |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Oto-038* | *0.00936* | ± | *0.00042* | *0.1506* | ± | *0.0214* | *60.0* | ± | *2.7* | *142.4* | ± | *20.2* | *1.39* | *6.87* |
| *Oto-039* | *0.00839* | ± | *0.00052* | *0.1937* | ± | *0.0272* | *53.8* | ± | *3.3* | *179.7* | ± | *25.2* | *0.83* | *3.50* |
| *Oto-040* | *0.00826* | ± | *0.00045* | *0.1111* | ± | *0.0150* | *53.0* | ± | *2.9* | *107.0* | ± | *14.5* | *1.24* | *7.91* |
| *Oto-041* | *0.01125* | ± | *0.00072* | *0.3169* | ± | *0.0438* | *72.1* | ± | *4.6* | *279.5* | ± | *38.6* | *0.54* | *0.00* |
| Oto-042 | 0.01363 | ± | 0.00071 | 0.0834 | ± | 0.0139 | 87.3 | ± | 4.5 | 81.3 | ± | 13.5 | 0.70 | 0.00 |
| Oto-043 | 0.01113 | ± | 0.00078 | 0.0725 | ± | 0.0214 | 71.3 | ± | 5.0 | 71.0 | ± | 21.0 | 0.94 | 9.34 |
| Oto-044 | 0.00986 | ± | 0.00055 | 0.0631 | ± | 0.0121 | 63.2 | ± | 3.5 | 62.1 | ± | 11.9 | 0.56 | 1.54 |
| Oto-045 | 0.00890 | ± | 0.00056 | 0.0501 | ± | 0.0131 | 57.1 | ± | 3.6 | 49.6 | ± | 13.0 | 0.59 | 0.00 |
| *Oto-046* | *0.00879* | ± | *0.00055* | *0.0823* | ± | *0.0157* | *56.4* | ± | *3.5* | *80.3* | ± | *15.3* | *1.26* | *0.51* |
| *Oto-047* | *0.00802* | ± | *0.00058* | *0.0928* | ± | *0.0207* | *51.5* | ± | *3.7* | *90.1* | ± | *20.1* | *0.99* | *1.73* |
| *Oto-048* | *0.01339* | ± | *0.00108* | *0.3344* | ± | *0.0647* | *85.7* | ± | *6.9* | *292.9* | ± | *56.7* | *1.07* | *0.00* |
| *Oto-049* | *0.26936* | ± | *0.01209* | *4.1404* | ± | *0.2502* | *1537.6* | ± | *69.0* | *1662.3* | ± | *100.5* | *0.11* | *0.19* |
| *Oto-050* | *0.00859* | ± | *0.00044* | *0.0720* | ± | *0.0092* | *55.1* | ± | *2.9* | *70.6* | ± | *9.0* | *0.92* | *1.79* |
| *Oto-051* | *0.00897* | ± | *0.00033* | *0.0655* | ± | *0.0080* | *57.6* | ± | *2.1* | *64.5* | ± | *7.8* | *0.83* | *0.00* |
| Oto-052 | 0.00895 | ± | 0.00054 | 0.0532 | ± | 0.0158 | 57.5 | ± | 3.5 | 52.6 | ± | 15.6 | 2.41 | 8.91 |
| *Oto-053* | *0.02700* | ± | *0.00108* | *0.0881* | ± | *0.0183* | *171.7* | ± | *6.9* | *85.7* | ± | *17.8* | *1.75* | *0.20* |
| Oto-054 | 0.00883 | ± | 0.00049 | 0.0694 | ± | 0.0161 | 56.7 | ± | 3.2 | 68.1 | ± | 15.8 | 1.40 | 0.00 |
| *Oto-055* | *0.00911* | ± | *0.00033* | *0.1442* | ± | *0.0130* | *58.5* | ± | *2.1* | *136.7* | ± | *12.4* | *0.45* | *7.64* |
| *Oto-056* | *0.00937* | ± | *0.00058* | *0.0962* | ± | *0.0223* | *60.1* | ± | *3.7* | *93.2* | ± | *21.6* | *1.16* | *8.64* |
| Oto-057 | 0.00885 | ± | 0.00042 | 0.0531 | ± | 0.0114 | 56.8 | ± | 2.7 | 52.5 | ± | 11.2 | 0.95 | 8.05 |
| Oto-058 | 0.01063 | ± | 0.00043 | 0.0723 | ± | 0.0121 | 68.2 | ± | 2.8 | 70.9 | ± | 11.9 | 0.78 | 0.00 |
| *Oto-059* | *0.00870* | ± | *0.00040* | *0.0800* | ± | *0.0139* | *55.9* | ± | *2.6* | *78.1* | ± | *13.5* | *0.61* | *1.58* |
| Oto-060 | 0.00790 | ± | 0.00043 | 0.0520 | ± | 0.0142 | 50.8 | ± | 2.8 | 51.5 | ± | 14.0 | 2.27 | 2.13 |
| *Oto-061* | *0.00890* | ± | *0.00052* | *0.2647* | ± | *0.0392* | *57.1* | ± | *3.3* | *238.4* | ± | *35.3* | *1.31* | *0.00* |
| *Oto-062* | *0.00944* | ± | *0.00049* | *0.0854* | ± | *0.0183* | *60.6* | ± | *3.1* | *83.2* | ± | *17.8* | *1.02* | *0.00* |
| *Oto-063* | *0.00860* | ± | *0.00042* | *0.0777* | ± | *0.0156* | *55.2* | ± | *2.7* | *76.0* | ± | *15.2* | *1.58* | *0.00* |
| Oto-064 | 0.01061 | ± | 0.00033 | 0.0745 | ± | 0.0092 | 68.0 | ± | 2.1 | 73.0 | ± | 9.0 | 1.44 | 0.00 |
| Oto-065 | 0.01398 | ± | 0.00049 | 0.0972 | ± | 0.0143 | 89.5 | ± | 3.2 | 94.2 | ± | 13.9 | 0.45 | 0.00 |
| Oto-066 | 0.01747 | ± | 0.00070 | 0.1032 | ± | 0.0198 | 111.7 | ± | 4.5 | 99.7 | ± | 19.2 | 1.30 | 0.00 |
| *Oto-067* | *0.00799* | ± | *0.00021* | *0.0595* | ± | *0.0054* | *51.3* | ± | *1.4* | *58.6* | ± | *5.4* | *0.48* | *0.00* |
| Oto-068 | 0.01627 | ± | 0.00059 | 0.1223 | ± | 0.0183 | 104.1 | ± | 3.8 | 117.1 | ± | 17.5 | 0.73 | 0.00 |
| Oto-069 | 0.00931 | ± | 0.00046 | 0.0725 | ± | 0.0159 | 59.8 | ± | 2.9 | 71.1 | ± | 15.6 | 0.72 | 2.35 |
| Oto-070 | 0.01362 | ± | 0.00040 | 0.0928 | ± | 0.0104 | 87.2 | ± | 2.6 | 90.1 | ± | 10.1 | 0.56 | 0.72 |
| *Oto-071* | *0.00832* | ± | *0.00041* | *0.0954* | ± | *0.0173* | *53.4* | ± | *2.6* | *92.6* | ± | *16.7* | *0.88* | *0.00* |
| Oto-072 | 0.00982 | ± | 0.00056 | 0.0788 | ± | 0.0209 | 63.0 | ± | 3.6 | 77.0 | ± | 20.4 | 0.83 | 0.00 |
| Oto-073 | 0.01207 | ± | 0.00041 | 0.0872 | ± | 0.0138 | 77.3 | ± | 2.6 | 84.9 | ± | 13.4 | 0.65 | 1.18 |
| *Oto-074* | *0.00780* | ± | *0.00034* | *0.0621* | ± | *0.0121* | *50.1* | ± | *2.2* | *61.1* | ± | *11.9* | *1.49* | *0.00* |
| Oto-075 | 0.01110 | ± | 0.00018 | 0.0740 | ± | 0.0051 | 71.2 | ± | 1.1 | 72.5 | ± | 5.0 | 0.85 | 0.00 |
| Oto-076 | 0.00844 | ± | 0.00033 | 0.0606 | ± | 0.0110 | 54.2 | ± | 2.1 | 59.7 | ± | 10.9 | 1.33 | 0.00 |
| Oto-077 | 0.00896 | ± | 0.00039 | 0.0499 | ± | 0.0118 | 57.5 | ± | 2.5 | 49.4 | ± | 11.7 | 1.38 | 7.11 |
| *Oto-078* | *0.01016* | ± | *0.00029* | *0.1103* | ± | *0.0119* | *65.2* | ± | *1.9* | *106.2* | ± | *11.5* | *1.61* | *0.82* |
| Oto-079 | 0.00866 | ± | 0.00036 | 0.0517 | ± | 0.0111 | 55.6 | ± | 2.3 | 51.1 | ± | 11.0 | 1.37 | 1.37 |
| *Oto-080* | *0.00799* | ± | *0.00022* | *0.0645* | ± | *0.0071* | *51.3* | ± | *1.4* | *63.5* | ± | *7.0* | *1.39* | *2.75* |
| Oto-081 | 0.00786 | ± | 0.00027 | 0.0515 | ± | 0.0083 | 50.5 | ± | 1.8 | 51.0 | ± | 8.3 | 2.19 | 0.00 |
| *Oto-082* | *0.01069* | ± | *0.00041* | *0.0998* | ± | *0.0155* | *68.5* | ± | *2.6* | *96.6* | ± | *15.0* | *1.64* | *7.50* |
| *Oto-083* | *0.01047* | ± | *0.00049* | *0.0903* | ± | *0.0185* | *67.1* | ± | *3.2* | *87.8* | ± | *18.0* | *0.89* | *6.30* |
| Oto-084 | 0.01331 | ± | 0.00044 | 0.0968 | ± | 0.0139 | 85.2 | ± | 2.8 | 93.9 | ± | 13.5 | 1.18 | 0.34 |
| *Oto-085* | *0.00890* | ± | *0.00034* | *0.0709* | ± | *0.0119* | *57.1* | ± | *2.2* | *69.5* | ± | *11.7* | *1.00* | *0.00* |
| Oto-086 | 0.00879 | ± | 0.00053 | 0.0706 | ± | 0.0188 | 56.4 | ± | 3.4 | 69.3 | ± | 18.4 | 1.35 | 9.64 |
| *Oto-087* | *0.00883* | ± | *0.00075* | *0.4763* | ± | *0.0849* | *56.7* | ± | *4.8* | *395.6* | ± | *70.5* | *1.56* | *4.16* |
| Oto-088 | 0.00823 | ± | 0.00038 | 0.0529 | ± | 0.0113 | 52.8 | ± | 2.4 | 52.4 | ± | 11.2 | 1.49 | 0.00 |

Appendix 5

| Grain No. | $^{206}Pb/^{238}U$ | | | $^{207}Pb/^{235}U$ | | | $^{238}U$-$^{206}Pb$ age (Ma) | | | $^{235}U$-$^{207}Pb$ age (Ma) | | | Th/U | 206Pbc |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oto-089 | 0.01119 | ± | 0.00029 | 0.0802 | ± | 0.0089 | 71.7 | ± | 1.9 | 78.3 | ± | 8.7 | 0.76 | 0.51 |
| *Oto-090* | *0.00854* | ± | *0.00058* | *0.0857* | ± | *0.0244* | *54.8* | ± | *3.7* | *83.5* | ± | *23.8* | *1.07* | *2.49* |
| *Oto-091* | *0.00944* | ± | *0.00046* | *0.0892* | ± | *0.0180* | *60.6* | ± | *3.0* | *86.8* | ± | *17.5* | *1.00* | *4.43* |
| Oto-092 | 0.03417 | ± | 0.00068 | 0.2360 | ± | 0.0183 | 216.6 | ± | 4.3 | 215.1 | ± | 16.7 | 0.67 | 0.00 |
| *Oto-093* | *0.01117* | ± | *0.00050* | *0.1095* | ± | *0.0196* | *71.6* | ± | *3.2* | *105.5* | ± | *18.9* | *1.18* | *0.85* |
| Oto-094 | 0.01296 | ± | 0.00051 | 0.0852 | ± | 0.0185 | 83.0 | ± | 3.2 | 83.0 | ± | 18.0 | 0.41 | 0.00 |
| Oto-095 | 0.00881 | ± | 0.00039 | 0.0675 | ± | 0.0130 | 56.5 | ± | 2.5 | 66.3 | ± | 12.8 | 1.43 | 3.04 |
| *Oto-096* | *0.00876* | ± | *0.00058* | *0.0751* | ± | *0.0214* | *56.2* | ± | *3.7* | *73.5* | ± | *20.9* | *0.86* | *7.87* |
| Oto-097 | 0.00887 | ± | 0.00052 | 0.0579 | ± | 0.0164 | 56.9 | ± | 3.3 | 57.2 | ± | 16.2 | 1.56 | 3.99 |
| Oto-098 | 0.01053 | ± | 0.00025 | 0.0703 | ± | 0.0062 | 67.5 | ± | 1.6 | 69.0 | ± | 6.1 | 1.14 | 0.57 |
| Oto-099 | 0.01262 | ± | 0.00041 | 0.0907 | ± | 0.0123 | 80.9 | ± | 2.6 | 88.2 | ± | 12.0 | 1.03 | 0.46 |
| Oto-100 | 0.00899 | ± | 0.00042 | 0.0665 | ± | 0.0138 | 57.7 | ± | 2.7 | 65.4 | ± | 13.6 | 0.90 | 0.00 |
| *Oto-101* | *0.01000* | ± | *0.00043* | *0.6371* | ± | *0.0559* | *64.1* | ± | *2.7* | *500.5* | ± | *43.9* | *0.90* | *3.61* |
| *Oto-102* | *0.01002* | ± | *0.00057* | *3.6440* | ± | *0.3245* | *64.3* | ± | *3.7* | *1559.1* | ± | *138.9* | *1.34* | *0.00* |
| *Oto-103* | *0.00952* | ± | *0.00040* | *0.0769* | ± | *0.0127* | *61.1* | ± | *2.5* | *75.3* | ± | *12.4* | *0.96* | *0.00* |
| Oto-104 | 0.00847 | ± | 0.00039 | 0.0513 | ± | 0.0114 | 54.4 | ± | 2.5 | 50.8 | ± | 11.3 | 1.32 | 2.85 |
| *Oto-105* | *0.01351* | ± | *0.00082* | *0.2808* | ± | *0.0493* | *86.5* | ± | *5.3* | *251.3* | ± | *44.1* | *1.13* | *0.00* |
| *Oto-106* | *0.00932* | ± | *0.00042* | *0.1231* | ± | *0.0183* | *59.8* | ± | *2.7* | *117.9* | ± | *17.5* | *2.09* | *0.00* |
| *Oto-107* | *0.00927* | ± | *0.00063* | *0.0961* | ± | *0.0246* | *59.5* | ± | *4.1* | *93.2* | ± | *23.8* | *1.35* | *8.04* |
| Oto-108 | 0.00870 | ± | 0.00045 | 0.0582 | ± | 0.0135 | 55.8 | ± | 2.9 | 57.4 | ± | 13.3 | 1.11 | 8.29 |
| Oto-109 | 0.00853 | ± | 0.00039 | 0.0515 | ± | 0.0109 | 54.8 | ± | 2.5 | 50.9 | ± | 10.8 | 1.78 | 7.44 |
| *Oto-110* | *0.00822* | ± | *0.00042* | *0.0647* | ± | *0.0137* | *52.8* | ± | *2.7* | *63.7* | ± | *13.5* | *1.49* | *0.00* |
| Oto-111 | 0.01011 | ± | 0.00064 | 0.0783 | ± | 0.0211 | 64.8 | ± | 4.1 | 76.6 | ± | 20.6 | 1.42 | 0.00 |
| Oto-112 | 0.01076 | ± | 0.00051 | 0.0634 | ± | 0.0132 | 69.0 | ± | 3.3 | 62.4 | ± | 13.0 | 1.02 | 5.44 |
| *Oto-113* | *0.00816* | ± | *0.00050* | *0.0768* | ± | *0.0180* | *52.4* | ± | *3.2* | *75.1* | ± | *17.6* | *1.33* | *7.50* |
| *Oto-114* | *0.30842* | ± | *0.00726* | *5.0137* | ± | *0.1682* | *1732.9* | ± | *40.8* | *1821.6* | ± | *61.1* | *0.25* | *0.06* |
| *Oto-115* | *0.01381* | ± | *0.00042* | *0.1074* | ± | *0.0100* | *88.4* | ± | *2.7* | *103.6* | ± | *9.6* | *0.64* | *0.00* |
| *Oto-116* | *0.00931* | ± | *0.00042* | *0.1075* | ± | *0.0160* | *59.7* | ± | *2.7* | *103.6* | ± | *15.4* | *0.93* | *1.49* |
| *Oto-117* | *0.00891* | ± | *0.00047* | *0.1258* | ± | *0.0208* | *57.2* | ± | *3.0* | *120.3* | ± | *19.9* | *1.18* | *0.21* |
| Oto-118 | 0.01054 | ± | 0.00042 | 0.0665 | ± | 0.0108 | 67.6 | ± | 2.7 | 65.3 | ± | 10.6 | 0.93 | 4.75 |
| Oto-119 | 0.00808 | ± | 0.00034 | 0.0531 | ± | 0.0043 | 51.9 | ± | 2.2 | 52.6 | ± | 4.2 | 0.35 | 0.00 |
| *Oto-120* | *0.01058* | ± | *0.00046* | *0.0771* | ± | *0.0077* | *67.9* | ± | *3.0* | *75.5* | ± | *7.5* | *1.50* | *0.50* |
| Oto-121 | 0.00867 | ± | 0.00048 | 0.0621 | ± | 0.0113 | 55.7 | ± | 3.1 | 61.1 | ± | 11.2 | 2.70 | 0.00 |
| Oto-122 | 0.00832 | ± | 0.00048 | 0.0612 | ± | 0.0123 | 53.4 | ± | 3.1 | 60.3 | ± | 12.1 | 1.00 | 0.00 |
| *Oto-123* | *0.00872* | ± | *0.00050* | *0.0681* | ± | *0.0131* | *56.0* | ± | *3.2* | *66.9* | ± | *12.9* | *0.77* | *0.00* |
| *Oto-124* | *0.00871* | ± | *0.00058* | *0.0776* | ± | *0.0186* | *55.9* | ± | *3.7* | *75.9* | ± | *18.2* | *1.36* | *0.00* |
| *Oto-125* | *0.00844* | ± | *0.00049* | *0.0683* | ± | *0.0134* | *54.2* | ± | *3.1* | *67.1* | ± | *13.1* | *1.64* | *0.25* |
| *Oto-126* | *0.00846* | ± | *0.00042* | *0.0680* | ± | *0.0097* | *54.3* | ± | *2.7* | *66.8* | ± | *9.5* | *0.79* | *0.92* |