Table 1. Nuclear spectroscopic data and yields of fission products in the 5.42 MeV neutron-induced fission of 232Th.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Nuclide | Half-life | γ-ray  Energy (keV) | γ-ray  abundance (%) | *YR*(%) | *YA* (%) |
| 85Krm  87Kr  88Kr  91Sr  92Sr  93Y  95Zr  97Zr  99Mo  103Ru  105Rh  112Ag  115Cdg  115Cdtotal  127Sb  128Sn  129Sb  131I  132Te  133I  134I  135I  139Ba  140Ba  141Ce  142La  143Ce  147Nd  150Pm | 4.48 h  76.3 min  2.84 h  9.63 h  2.71 h  10.18 h  64.02 d  16.91 h  65.94 h  39.26 d  35.36 h  3.13 h  53.46 h  3.85 d  59.07 min  4.32 h  8.02 d  3.2 d  20.8 h  52.5 min  6.57 h  83.03 min  12.75 d  32.5 d  91.1 min  33.03 h  10.98 d  2.68 h | 151.2  304.9  402.6  196.3  749.8  1024.3  1384.9  266.9  724.3  743.4  140.5  739.5  497.1  319.1  617.5  527.9  687.0  482.3  812.4  364.5  228.1  529.9  847.3  884.09  1131.5  1260.4  165.8  537.3  145.4  641.3  293.3  531.0  333.97 | 75.0  14.0  49.6  25.9  23.6  33.0  90.0  7.3  44.2  93.0  89.4  12.13  90.0  19.2  43.0  27.45  37.0  59.0  43.0  81.7  88.0  87.0  95.9  65.0  22.7  20.3  23.7  35.4  20.5  47.0  42.8  13.1  68.0 | 3.832±0.346  3.918±0.101  5.859±0.572  5.778±0.415  5.782±0.427  6.223±0.683  5.453±0.052  5.369±0.555  6.664±0.678  4.639±0.422  2.874±0.228  3.107±0.247  0.479±0.128  0.128±0.014  0.204±0.033  0.180±0.033  0.209±0.038\*  0.498±0.081  0.993±0.107  1.631±0.146  3.007±0.242  3.604±0.287  4.796±0.606  6.835±0.615  6.750±0.521  5.746±0.352  5.817±0.464  7.565±0.455  8.177±0.574  7.314±0.493  6.137±0.394  6.432±0.361  2.275±0.161  0.522±0.047 | 3.832±0.346  3.846±0.101  5.877±0.574  5.872±0.422  5.782±0.427  6.223±0.683  5.464±0.052  5.369±0.555  6.664±0.678  4.643±0.422  2.874±0.228  3.107±0.247  0.479±0.128  0.128±0.014  0.204±0.033    0.209±0.038\*  0.498±0.081  1.058±0.114  1.641±0.147  3.007±0.242  3.633±0.289  4.811±0.607  6.849±0.617  6.764±0.522  5.810±0.356  5.881±0.470  7.565±0.455  8.177±0.574  7.314±0.493  6.137±0.394  6.432±0.361  2.281±0.161  0.522±0.047 |

*YR* – Cumulative yields, *YA* – Mass yields, 92Sr – Fission rate monitor.

\*The yields of 115Cdtotal is based on the ratio of 115Cdg/115Cdm = 6 as done in Ref. [50].

Table 2. Nuclear spectroscopic data and yields of fission products in the 7.75 MeV neutron-induced fission of 232Th.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Nuclide | Half-life | γ-ray  Energy(keV) | γ-ray  abundance (%) | *YR*(%) | *YA* (%) |
| 85Krm  87Kr  88Kr  91Sr  92Sr  93Y  95Zr  97Zr  99Mo  103Ru  105Rh  112Ag  115Cdg  115Cdtotal  127Sb  128Sn  129Sb  131I  132Te  133I  134I  135I  139Ba  140Ba  141Ce  142La  143Ce  147Nd  150Pm | 4.48 h  76.3 min  2.84 h  9.63 h  2.71 h  10.18 h  64.02 d  16.91 h  65.94 h  39.26 d  35.36 h  3.13 h  53.46 h  3.85 d  59.07 min  4.32 h  8.02 d  3.2 d  20.8 h  52.5 min  6.57 h  83.03 min  12.75 d  32.5 d  91.1 min  33.03 h  10.98 d  2.68 h | 151.2  304.9  402.6  196.3  749.8  1024.3  1384.9  266.9  724.3  743.4  140.5  739.5  497.1  319.1  617.5  527.9  687.0  482.3  812.4  364.5  228.1  529.9  847.3  884.09  1131.5  1260.4  165.8  537.3  145.4  641.3  293.3  531.0  333.97 | 75.0  14.0  49.6  25.9  23.6  33.0  90.0  7.3  44.2  93.0  89.4  12.13  90.0  19.2  43.0  27.45  37.0  59.0  43.0  81.7  88.0  87.0  95.9  65.0  22.7  20.3  23.7  35.4  20.5  47.0  42.8  13.1  68.0 | 3.331±0.137  3.827±0.217  5.677±0.170  5.551±0.112  5.783±0.406  6.005±0.567  5.201±0.052  5.127±0.383  6.454±0.454  4.701±0.430  3.033±0.241  3.123±0.250  0.533±0.151  0.241±0.028  0.274±0.024  0.260±0.024  0.302±0.028\*  0.533±0.052  1.328±0.146  1.706±0.232  3.052±0.208  3.846±0.435  4.904±0.345  6.687±0.457  6.927±0.487  5.262±0.416  5.609±0.706  7.031±0.562  8.240±0.524  6.984±0.743  6.119±0.317  6.766±0.581  2.351±0.274  0.581±0.019 | 3.331±0.137  3.827±0.217  5.694±0.170  5.642±0.113  5.783±0.406  6.005±0.567  5.212±0.052  5.127±0.383  6.454±0.454  4.701±0.430  3.033±0.241  3.123±0.250  0.533±0.151  0.241±0.028  0.274±0.024    0.302±0.028\*  0.533±0.052  1.412±0.156  1.716±0.233  3.052±0.208  3.877±0.438  4.909±0.345  6.700±0.458  6.947±0.488  5.316±0.421  5.665±0.713  7.031±0.562  8.240±0.524  6.984±0.743  6.119±0.317  6.766±0.581  2.358±0.275  0.582±0.019 |

*YR* – Cumulative yields, *YA* – Mass yields, 92Sr – Fission rate monitor.

\*The yields of 115Cdtotal is based on the ratio of 115Cdg/115Cdm = 6 as done in Ref. [50].

Table 3. Nuclear spectroscopic data and yields of fission products in the 9.35 MeV neutron-induced fission of 232Th.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Nuclide | Half-life | γ-ray  Energy(keV) | γ-ray  abundance (%) | *YR*(%) | *YA* (%) |
| 85Krm  87Kr  88Kr  91Sr  92Sr  93Y  95Zr  97Zr  99Mo  103Ru  105Rh  112Ag  115Cdg  115Cdtotal  127Sb  128Sn  129Sb  131I  132Te  133I  134I  135I  139Ba  140Ba  141Ce  142La  143Ce  147Nd  150Pm | 4.48 h  76.3 min  2.84 h  9.63 h  2.71 h  10.18 h  64.02 d  16.91 h  65.94 h  39.26 d  35.36 h  3.13 h  53.46 h  3.85 d  59.07 min  4.32 h  8.02 d  3.2 d  20.8 h  52.5 min  6.57 h  83.03 min  12.75 d  32.5 d  91.1 min  33.03 h  10.98 d  2.68 h | 151.2  304.9  402.6  196.3  749.8  1024.3  1384.9  266.9  724.3  743.4  140.5  739.5  497.1  319.1  617.5  527.9  687.0  482.3  812.4  364.5  228.1  529.9  847.3  884.09  1131.5  1260.4  165.8  537.3  145.4  641.3  293.3  531.0  333.97 | 75.0  14.0  49.6  25.9  23.6  33.0  90.0  7.3  44.2  93.0  89.4  12.13  90.0  19.2  43.0  27.45  37.0  59.0  43.0  81.7  88.0  87.0  95.9  65.0  22.7  20.3  23.7  35.4  20.5  47.0  42.8  13.1  68.0 | 3.124±0.182  3.181±0.251  6.139±0.489  5.427±0.431  5.906±0.386  6.023±0.482  5.418±0.377  4.925±0.343  6.392±0.447  4.838±0.351  2.890±0.230  2.790±0.325  0.668±0.082  0.378±0.061  0.538±0.048  0.454±0.122  0.529±0.139\*  0.634±0.056  1.002±0.252  1.666±0.256  3.207±0.256  4.305±0.343  5.351±0.352  6.305±0.503  6.692±0.647  5.650±0.963  5.741±0.755  6.830±0.269  7.473±0.525  6.123±0.369  5.559±0.469  6.028±0.286  1.996±0.108  0.438±0.017 | 3.124±0.182  3.181±0.251  6.158±0.490  5.516±0.438  5.906±0.386  6.023±0.482  5.429±0.378  4.925±0.343  6.392±0.447  4.843±0.352  2.890±0.230  2.790±0.325  0.668±0.082  0.378±0.061  0.539±0.048    0.529±0.139\*  0.634±0.056  1.066±0.268  1.676±0.258  3.207±0.256  3.340±0.346  5.356±0.352  6.318±0.504  6.705±0.648  5.707±0.973  5.799±0.763  6.830±0.269  7.473±0.525  6.123±0.369  5.559±0.469  6.028±0.286  2.002±0.109  0.439±0.017 |

*YR* – Cumulative yields, *YA* – Mass yields, 92Sr – Fission rate monitor.

\*The yields of 115Cdtotal is based on the ratio of 115Cdg/115Cdm = 6 as done in Ref. [50].

Table 4. Nuclear spectroscopic data and yields of fission products in the 12.53 MeV neutron-induced fission of 232Th.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Nuclide | Half-life | γ-ray  Energy(keV) | γ-ray  abundance (%) | *YR*(%) | *YA* (%) |
| 85Krm  87Kr  88Kr  91Sr  92Sr  93Y  95Zr  97Zr  99Mo  103Ru  105Rh  112Ag  115Cdg  115Cdtotal  127Sb  128Sn  129Sb  131I  132Te  133I  134I  135I  139Ba  140Ba  141Ce  142La  143Ce  147Nd  150Pm | 4.48 h  76.3 min  2.84 h  9.63 h  2.71 h  10.18 h  64.02 d  16.91 h  65.94 h  39.26 d  35.36 h  3.13 h  53.46 h  3.85 d  59.07 min  4.32 h  8.02 d  3.2 d  20.8 h  52.5 min  6.57 h  83.03 min  12.75 d  32.5 d  91.1 min  33.03 h  10.98 d  2.68 h | 151.2  304.9  402.6  196.3  749.8  1024.3  1384.9  266.9  724.3  743.4  140.5  739.5  497.1  319.1  617.5  527.9  687.0  482.3  812.4  364.5  228.1  529.9  847.3  884.09  1131.5  1260.4  165.8  537.3  145.4  641.3  293.3  531.0  333.97 | 75.0  14.0  49.6  25.9  23.6  33.0  90.0  7.3  44.2  93.0  89.4  12.13  90.0  19.2  43.0  27.45  37.0  59.0  43.0  81.7  88.0  87.0  95.9  65.0  22.7  20.3  23.7  35.4  20.5  47.0  42.8  13.1  68.0 | 3.119±0.250  3.210±0.258  5.459±0.171  5.109±0.504  5.513±0.387  5.671±0.954  5.063±0.328  4.651±0.650  5.934±0.583  4.672±0.329  2.902±0.233  2.819±0.258  0.858±0.051  0.629±0.054  0.791±0.058  0.754±0.096  0.879±0.112\*  0.791±0.062  1.166±0.092  1.707±0.192  2.986±0.258  4.160±0.287  5.422±0.550  6.608±0.426  6.167±0.520  5.676±0.466  5.438±0.401  7.070±0.496  7.237±0.545  6.279±0.658  5.796±0.404  5.875±0.637  2.074±0.133  0.458±0.042 | 3.119±0.250  3.210±0.258  5.475±0.171  5.192±0.512  5.513±0.387  5.671±0.954  5.074±0.329  4.651±0.650  5.934±0.583  4.677±0.329  2.902±0.233  2.819±0.258  0.858±0.051  0.629±0.054  0.792±0.058    0.879±0.112\*  0.791±0.062  1.239±0.097  1.716±0.193  2.986±0.258  3.189±0.289  5.427±0.550  6.622±0.463  6.179±0.522  5.733±0.471  5.493±0.405  7.070±0.496  7.237±0.545  6.279±0.658  5.796±0.404  5.875±0.637  2.080±0.134  0.459±0.042 |

*YR* – Cumulative yields, *YA* – Mass yields, 92Sr – Fission rate monitor.

\*The yields of 115Cdtotal is based on the ratio of 115Cdg/115Cdm = 6 as done in Ref. [50].