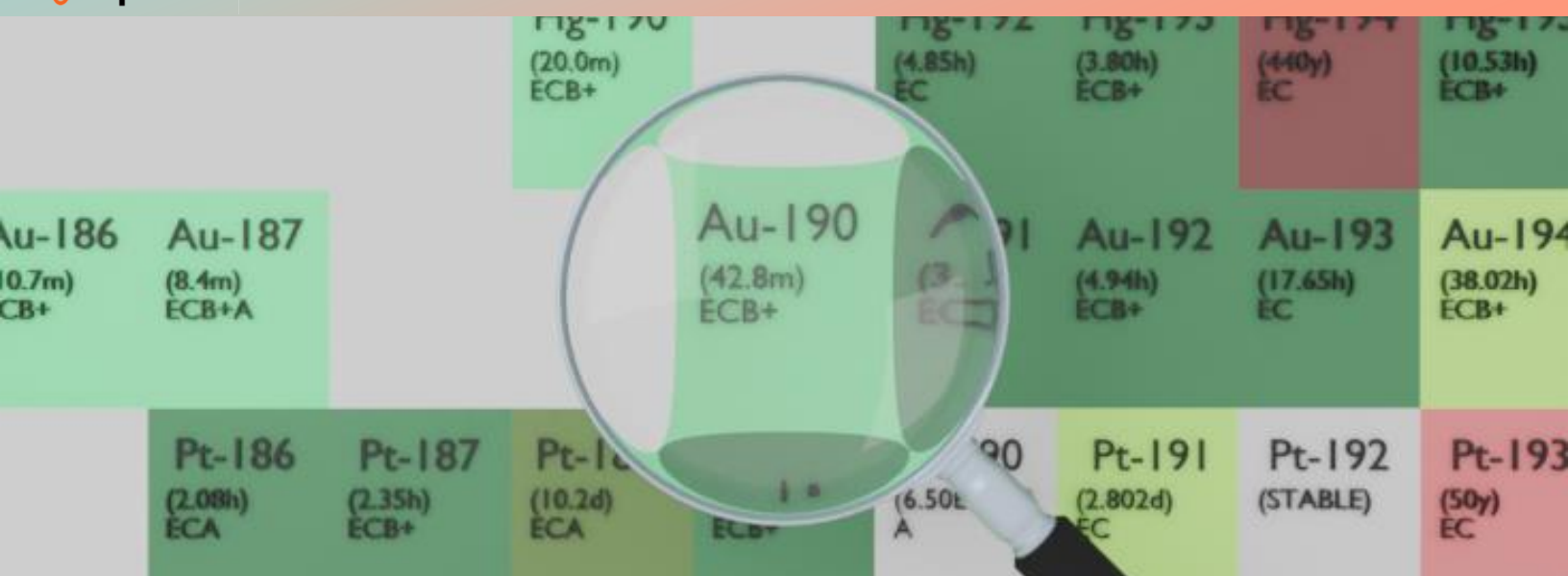




GOLD-190

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Au-190
Atomic number (Z): 79
Mass number (A): 190
Neutron number (N): 111

RADIOACTIVE DECAY

Decay modes: β^+ , Electron capture
Half-life: 42.8 [m]
Decay constant: $2.6992\text{e-}04$ [1/s]
Daughters: Pt-190 (100.0%)
Radioactive daughters: Pt-190

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.21292 [MeV]
Mean photon energy: 2.38071 [MeV]
Air kerma rate constant, Γ_{10} : $7.530\text{e-}17$ [$\text{Gy} \cdot \text{m}^2/\text{Bq} \cdot \text{s}$]
Air kerma coefficient, K_{air} : $8.051\text{e-}17$ [$\text{Gy} \cdot \text{m}^2/\text{Bq} \cdot \text{s}$]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : $3.411\text{e-}14$ [$\text{Gy} \cdot \text{kg}/\text{Bq} \cdot \text{s}$]
Equilibrium dose constant for alphas, Δ_{α} : $0.000\text{e+}00$ [$\text{Gy} \cdot \text{kg}/\text{Bq} \cdot \text{s}$]

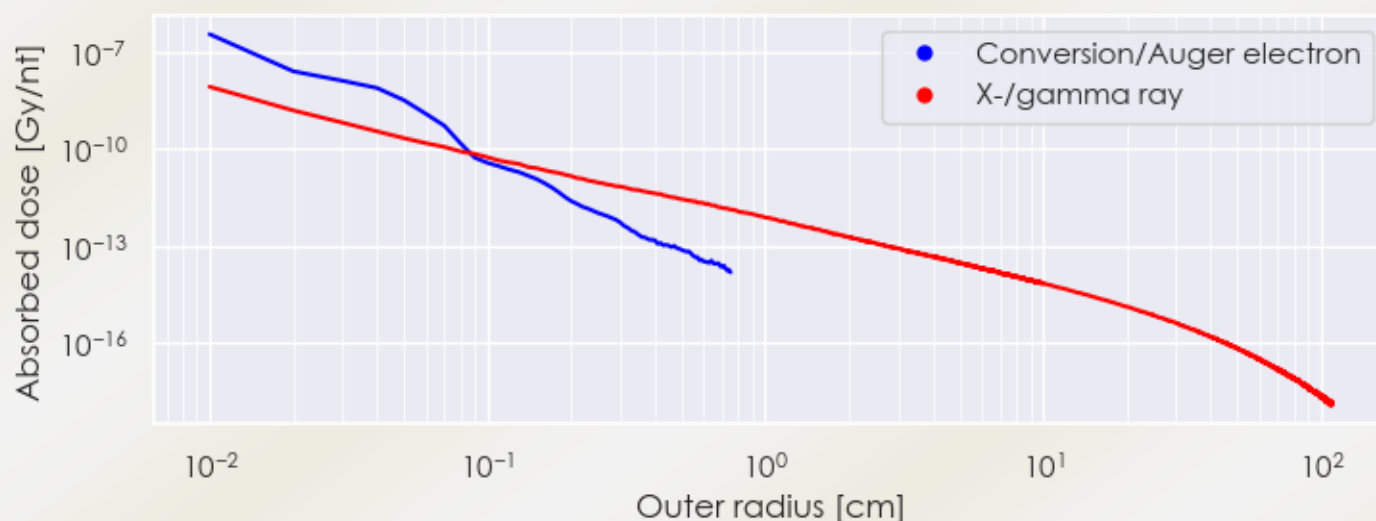
Equilibrium dose constant for betas/electrons, $\Delta_{\beta,\beta^+,e^-}$: 3.411×10^{-14} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 3.814×10^{-13} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

Dose point kernel source: **Graves, et al. Medical Physics. 2019 Nov.; 46(11):5284-5293.**

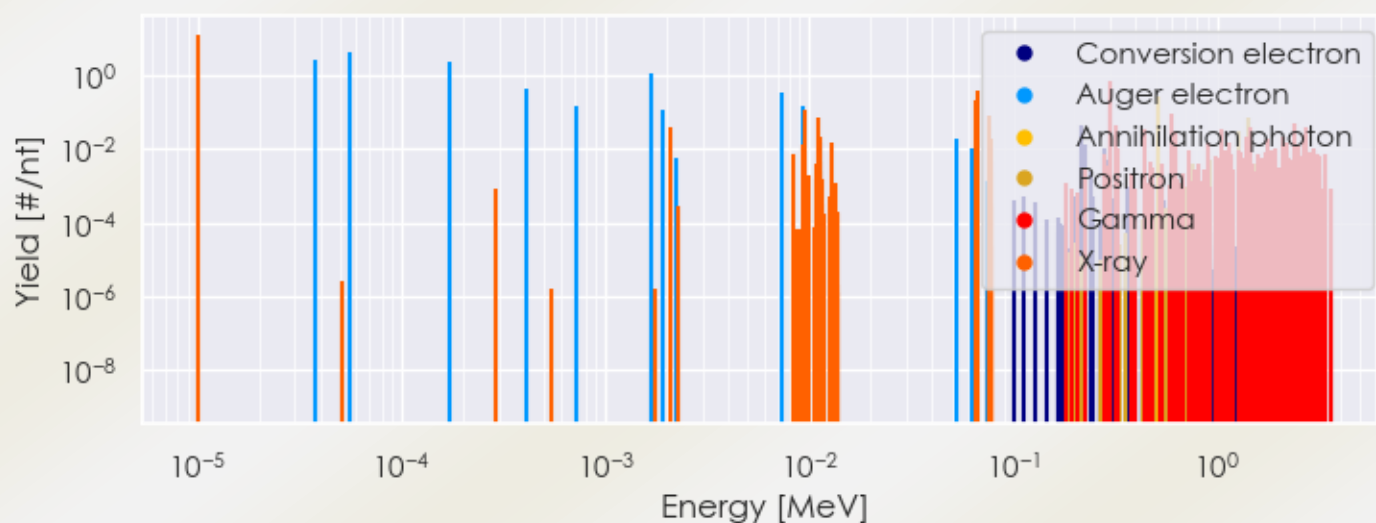
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Au-190 DPK.csv

SUMMARY SPECTRA (PLOT)

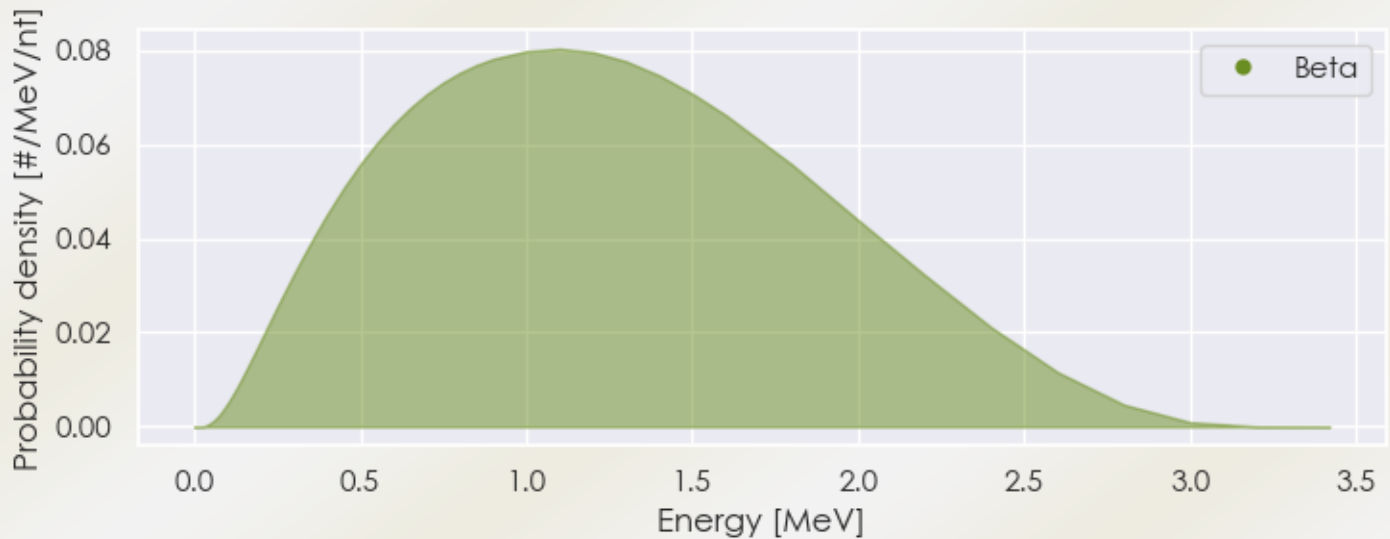
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Au-190 Summary Spectrum.csv

BETA SPECTRA (PLOT)

Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated beta spectra file here: www.mirdsoft.org/products/MIRDspecs/Au-190 Beta Spectrum.csv

TABULATED DATA

SUMMARY SPECTRA (TABLE)

Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**

Note: Radiations with yield < 0.01 are excluded from the table, but are available in the linked *.csv data.

Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Au-190 Summary Spectrum.csv

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
1.01424e-05	1.324e+01	X-ray
2.06874e-03	3.752e-02	X-ray
9.35457e-03	1.302e-02	X-ray
9.43805e-03	1.147e-01	X-ray
1.11006e-02	7.338e-02	X-ray
1.12510e-02	2.122e-02	X-ray
1.29799e-02	1.432e-02	X-ray
6.53020e-02	2.157e-01	X-ray
6.70480e-02	3.685e-01	X-ray
7.55931e-02	4.037e-02	X-ray

7.59780e-02	7.807e-02	X-ray
7.81028e-02	1.835e-02	X-ray
2.95820e-01	7.000e-01	Gamma
3.01820e-01	2.310e-01	Gamma
3.18960e-01	4.620e-02	Gamma
3.23170e-01	1.015e-02	Gamma
4.41250e-01	3.682e-02	Gamma
5.11000e-01	2.693e-01	Annihilation photon
5.97680e-01	9.310e-02	Gamma
6.05210e-01	1.477e-02	Gamma
6.16240e-01	1.540e-02	Gamma
6.20890e-01	2.380e-02	Gamma
6.25100e-01	2.940e-02	Gamma
9.07300e-01	1.435e-02	Gamma
1.05770e+00	3.430e-02	Gamma
1.13930e+00	1.428e-02	Gamma
1.39534e+00	2.240e-02	Gamma
1.44130e+00	3.920e-02	Gamma
1.78490e+00	2.037e-02	Gamma
1.92040e+00	1.050e-02	Gamma
2.08730e+00	1.120e-02	Gamma
2.09720e+00	2.170e-02	Gamma
2.21280e+00	1.470e-02	Gamma
2.38260e+00	5.040e-02	Gamma
2.41640e+00	4.760e-02	Gamma
2.45200e+00	1.260e-02	Gamma
2.46950e+00	1.190e-02	Gamma
2.49760e+00	1.267e-02	Gamma
2.65820e+00	2.380e-02	Gamma
2.68510e+00	1.344e-02	Gamma
2.75330e+00	4.200e-02	Gamma
2.95980e+00	1.050e-02	Gamma
2.98090e+00	1.120e-02	Gamma
1.27335e+00	2.994e-02	Positron
1.40959e+00	7.285e-02	Positron
3.74685e-05	2.819e+00	Auger electron
5.59254e-05	4.555e+00	Auger electron
1.71222e-04	2.399e+00	Auger electron

4.06057e-04	4.307e-01	Auger electron
7.23080e-04	1.461e-01	Auger electron
1.69626e-03	1.183e+00	Auger electron
1.90688e-03	1.126e-01	Auger electron
7.25728e-03	3.611e-01	Auger electron
9.30665e-03	1.489e-01	Auger electron
1.13842e-02	1.498e-02	Auger electron
5.27836e-02	2.015e-02	Auger electron
6.32891e-02	1.079e-02	Auger electron
2.17205e-01	4.450e-02	Conversion electron
2.23205e-01	1.397e-02	Conversion electron

USEFUL LINKS

Isotope decay characteristics are periodically updated as better measurements can be made - changes that may not be reflected on this page. Please see useful links:

National Nuclear Data Center (NNDC): <https://www.nndc.bnl.gov/nudat3/mird/>

International Atomic Energy Agency (IAEA) Livechart: <https://www-nds.iaea.org/relnsd/vcharthtml/VChartHTML.html>

REFERENCE LINKS

ICRP Report 107: <https://www.icrp.org/publication.asp?id=ICRP%20Publication%20107>

Graves et al. Dose Point Kernels: <https://doi.org/10.1002/mp.13789>

MIRD Decay Schemes 2nd Edition: https://sites.snmmi.org/SNMMI-MAIN/iCore/Store/StoreLayouts/Item_Detail.aspx?iProductCode=0-932004-80-6