One Month Simulation of the neutron generator

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This paper is obsolete because there are bugs in the simulation program. I have fixed it now. The new will come soon (Sep. 6, 2016).

1. Introduction

This is a report of the simulation of the neutron generator for a long period that is one month. The old report before this has the short period that is two days [1]. The simulation program has useful precision for the long period. I found that there is a large and increasing COP in the simulation. It is more than 2000.

2. The overview of the neutron generator

Please see Chapter 2 of “Simulation of the neutron generator” [1].

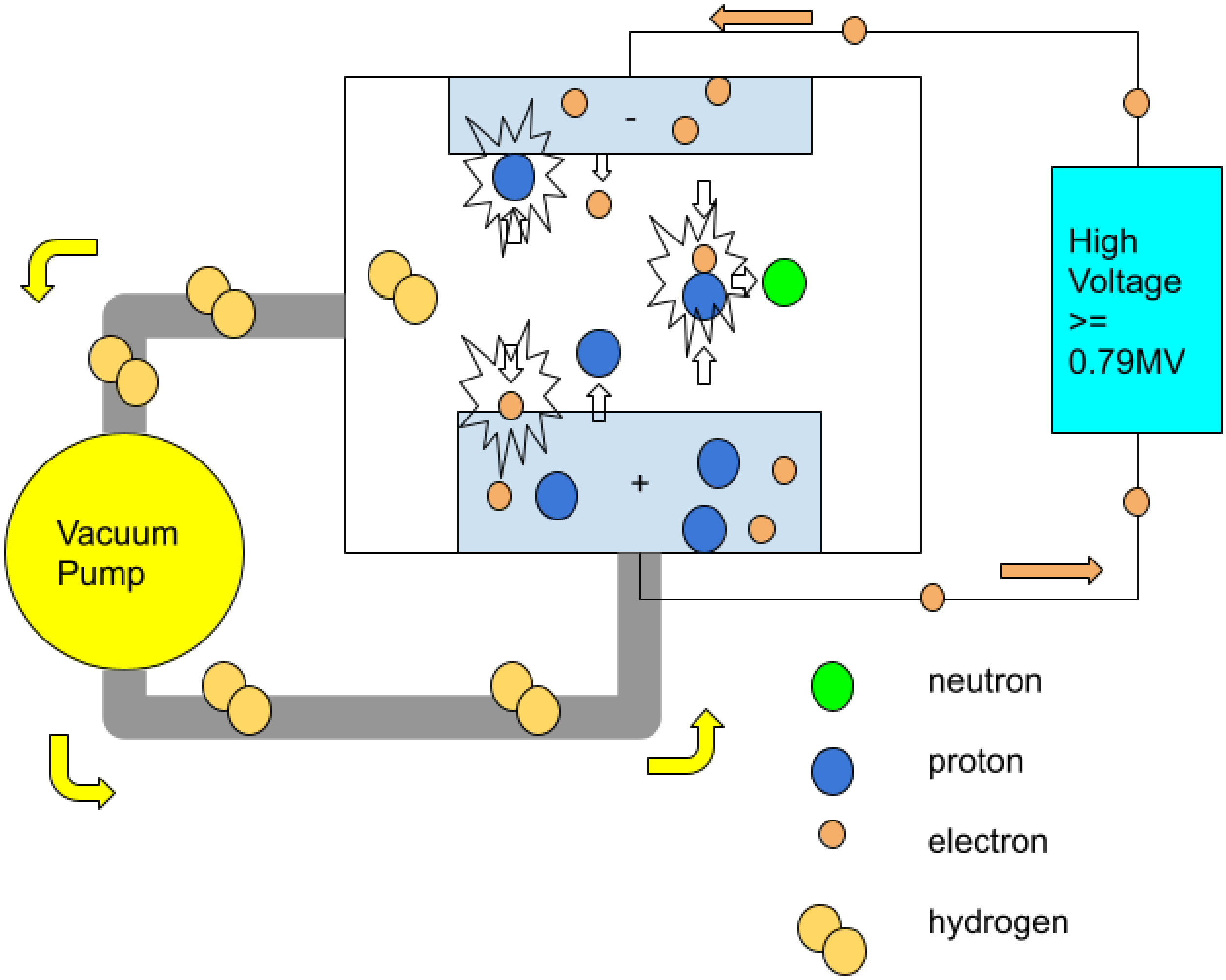


Figure 1. neutron generator

3. Physics

Please see Chapter 3 of “Simulation of the neutron generator” [1].

4. The overview of the simulation program

Please see Chapter 4 of “Simulation of the neutron generator” [1].

5. Results of the simulation while 1 month

5.1 Time 0

Negative Electrode Atoms
1 n halfLife 886.7 [sec] 0 [mol]
2 58Ni STABLE 0.680769 [mol]
3 60Ni STABLE 0.262231 [mol]
4 61Ni STABLE 0.011399 [mol]
5 62Ni STABLE 0.036345 [mol]
6 64Ni STABLE 0.009256 [mol]
Negative Electrode Sum of Mass * Mol : **58.6934** (= 58.6934 + 0 - 0) [U]
= 3.29246e+28 [MeV]

Positive Electrode Atoms
1 n halfLife 886.7 [sec] 0 [mol]
2 H STABLE 0.599931 [mol]
3 D STABLE 6.9e-05 [mol]
4 58Ni STABLE 0.680769 [mol]
5 60Ni STABLE 0.262231 [mol]
6 61Ni STABLE 0.011399 [mol]
7 62Ni STABLE 0.036345 [mol]
8 64Ni STABLE 0.009256 [mol]
Positive Electrode Sum of Mass * Mol : **59.2981** (= 59.2981 + 0 - 0) [U]
= 3.32638e+28 [MeV]

5.2 After 1 month

Negative Electrode Atoms
1 n halfLife 886.7 [sec] 0 [mol]
2 H STABLE 0.000105716 [mol]
3 D STABLE 7.31487e-13 [mol]
4 T halfLife 12.32 [year] 7.03452e-13 [mol]
5 3He STABLE 1.04175e-06 [mol]
6 4He STABLE 1.00295e-07 [mol]
7 58Fe STABLE 3.28185e-06 [mol]
8 60Fe halfLife 1.5 [year] 8.06368e-09 [mol]
9 58Co halfLife 70.86 [day] 1.28324e-07 [mol]

10 60Co halfLife 5.2713 [year] 1.14058e-07 [mol]
11 61Co halfLife 1.65 [hour] 4.83419e-13 [mol]
12 62Co halfLife 1.5 [mimute] 1.31363e-14 [mol]
13 58Ni STABLE 0.680766 [mol]
14 60Ni STABLE 0.262231 [mol]
15 61Ni STABLE 0.011399 [mol]
16 62Ni STABLE 0.036345 [mol]
17 64Ni STABLE 0.009256 [mol]
Negative Electrode Sum of Mass * Mol : **58.6935** (= 58.6934 + 0.000522656 - 0.000412576) [U]
= 3.29246e+28 [MeV]

The difference of "Negative Electrode Sum of Mass * Mol" is **: 58.6935 - 58.6934 = 0.0001, (58.6935 - 58.6934)/58.6934 = 0.0000017037 .**
This value means that the calculation of accumulation while very long time has good precision.

Positive Electrode Atoms
1 n halfLife 886.7 [sec] 2.25787e-07 [mol]
2 H STABLE 0.5986 [mol]
3 D STABLE 0.00139955 [mol]
4 T halfLife 12.32 [year] 1.92159e-06 [mol]
5 3He STABLE 1.95152e-07 [mol]
6 4He STABLE 1.74428e-10 [mol]
7 58Mn halfLife 3 [sec] 0 [mol]
8 59Mn halfLife 4.59 [sec] 0 [mol]
9 60Mn halfLife 51 [sec] 0 [mol]
10 58Fe STABLE 0.033349 [mol]
11 59Fe halfLife 44.495 [day] 3.96093e-05 [mol]
12 60Fe halfLife 1.5 [year] 0.000237295 [mol]
13 61Fe halfLife 5.98 [mimute] 0 [mol]
14 58Co halfLife 70.86 [day] 0.00269572 [mol]
15 59Co STABLE 0.00618014 [mol]
16 60Co halfLife 5.2713 [year] 0.00325009 [mol]
17 61Co halfLife 1.65 [hour] 5.15148e-08 [mol]
18 62Co halfLife 1.5 [mimute] 0 [mol]
19 63Co halfLife 26.9 [sec] 0 [mol]
20 64Co halfLife 0.3 [sec] 0 [mol]
21 58Ni STABLE 0.63272 [mol]
22 59Ni halfLife 7.6 [year] 0.00567698 [mol]
23 60Ni STABLE 0.254128 [mol]
24 61Ni STABLE 0.0158712 [mol]
25 62Ni STABLE 0.0359255 [mol]
26 63Ni halfLife 100.1 [year] 0.000653838 [mol]
27 64Ni STABLE 0.00908868 [mol]

28 65Ni halfLife 2.5172 [hour] 2.30359e-08 [mol]
29 66Ni halfLife 54.6 [hour] 1.52797e-12 [mol]
30 63Cu STABLE 1.00478e-05 [mol]
31 64Cu halfLife 12.7 [hour] 1.1329e-08 [mol]
32 65Cu STABLE 0.00017186 [mol]
33 66Cu halfLife 5.12 [mimute] 0 [mol]
34 64Zn STABLE 2.99648e-08 [mol]
35 65Zn halfLife 243.66 [day] 7.89608e-11 [mol]
36 66Zn STABLE 1.64169e-06 [mol]
37 67Zn STABLE 1.05617e-08 [mol]
38 68Zn STABLE 1.201e-11 [mol]
Positive Electrode Sum of Mass * Mol : **59.3173** (= 59.2981 + 6.06099 - 6.04179) [U]
= 3.32746e+28 [MeV]

The difference of “Negative Electrode Sum of Mass * Mol” is **: 59.3173 - 59.2981 = 0.0192, (59.3173 - 59.2981)/59.2981 = 0.0003237**
This value means that the calculation of accumulation while very long time has reasonable precision.

TOTAL ENERGY @ 01[Month]01[D]11:31:00 COP **2097.56** (= OUTPUT 3.83141e+23 / INPUT 1.8266e+20 [MeV]) diffCOP 0.0882173 diffOutput 2.44497e+19 [MeV](= 65.2878 [KWH/h]) diffInput 3.97424e+15 [MeV](= 0.0106124 [KWH/h])

5.3 Nuclear Reactions

NEGATIVE ELECTRODE

N+ 1 BETA_PLUS
58Co(53966.8) -> 58Fe-(53964.5) + e+(0.510999) + ve(0) + 1.7965[MeV/c^2]

N+ 2 BETA_MINUS
60Co(55828) -> 60Ni+(55824.7) + e-(0.510999) + ~ve(0) + 2.82308[MeV/c^2]

N+ 3 BETA_MINUS
60Fe(55828.2) -> 60Co+(55827.5) + e-(0.510999) + ~ve(0) + 0.237438[MeV/c^2]

N+ 4 BETA_MINUS
61Co(56758.2) -> 61Ni+(56756.4) + e-(0.510999) + ~ve(0) + 1.32254[MeV/c^2]

N+ 5 BETA_MINUS

62Co(57691.2) -> 62Ni+(57685.4) + e-(0.510999) + ~ve(0) + 5.31501[MeV/c^2]

N+ 6 COLLIDE_ELECTRON_BY_HIGH_VOLTAGE
p+(938.272) + e-(0.510999) + (0.782414 + x)[MeV] -> n(939.565) + ve + (0 + x)[MeV]

N+ 7 COLLIDE_ELECTRON_BY_COMPTON_EFFECT
3He+(2808.9) + e-(0.510999) + (0.0185913 + x)[MeV] -> T(2809.43) + ve + (0 + x)[MeV]

N+ 8 COLLIDE_ELECTRON_BY_COMPTON_EFFECT
58Co+(53966.3) + e-(0.510999) + (0 + x)[MeV] -> 58Fe(53964.5) + ve + (2.3075 + x)[MeV]

N+ 9 COLLIDE_ELECTRON_BY_COMPTON_EFFECT
58Ni+(53965.9) + e-(0.510999) + (0.381819 + x)[MeV] -> 58Co(53966.8) + ve + (0 + x)[MeV]

N+ 10 COLLIDE_ELECTRON_BY_COMPTON_EFFECT
60Co+(55827.5) + e-(0.510999) + (0.237438 + x)[MeV] -> 60Fe(55828.2) + ve + (0 + x)[MeV]

N+ 11 COLLIDE_ELECTRON_BY_COMPTON_EFFECT
60Ni+(55824.7) + e-(0.510999) + (2.82308 + x)[MeV] -> 60Co(55828) + ve + (0 + x)[MeV]

N+ 12 COLLIDE_ELECTRON_BY_COMPTON_EFFECT
61Ni+(56756.4) + e-(0.510999) + (1.32254 + x)[MeV] -> 61Co(56758.2) + ve + (0 + x)[MeV]

N+ 13 COLLIDE_ELECTRON_BY_COMPTON_EFFECT
62Ni+(57685.4) + e-(0.510999) + (5.31501 + x)[MeV] -> 62Co(57691.2) + ve + (0 + x)[MeV]

N+ 14 COLLIDE_PROTON_BY_HIGH_VOLTAGE
D-(1876.63) + p+(938.272) + (0 + x)[MeV] -> 3He(2809.41) + (5.49348 + x)[MeV]

N+ 15 COLLIDE_PROTON_BY_HIGH_VOLTAGE
T-(2809.94) + p+(938.272) + (0 + x)[MeV] -> 4He(3728.4) + (19.8139 + x)[MeV]

N+ 16 COLLIDE_PROTON_BY_HIGH_VOLTAGE
n(939.565) + p+(938.272) + (0 + x)[MeV] -> d+(1875.61) + (2.22463 + x)[MeV]

N+ 17 COLLIDE_DEUTERIUM_BY_HIGH_VOLTAGE
H-(939.294) + d+(1875.61) + (0 + x)[MeV] -> 3He(2809.41) + (5.49348 + x)[MeV]

POSITIVE ELECTRODE

There are many kind of isotopes on the positive electrode after two days. The reaction with the “Time” line means the reaction was viewed after two days. The reaction without the “Time” line means the reaction was viewed before two days.

P+ 1 BETA_PLUS
58Co(53966.8) -> 58Fe-(53964.5) + e+(0.510999) + ve(0) + 1.7965[MeV/c^2]

P+ 2 BETA_PLUS
64Cu(59550.2) -> 64Ni-(59548.5) + e+(0.510999) + ve(0) + 1.16401[MeV/c^2]
Time[03[Day]00:00:20 , 01[Month]01[D]11:30:50]

P+ 3 BETA_PLUS
65Zn(60481.2) -> 65Cu-(60479.8) + e+(0.510999) + ve(0) + 0.841065[MeV/c^2]
Time[27[Day]22:06:50 , 01[Month]01[D]11:30:40]

P+ 4 ELECTRON_CAPTURE
59Ni+(54897) + e-(0.510999) -> 59Co(54895.9) + ve(0) + 1.0728[MeV/c^2]

P+ 5 BETA_MINUS
58Mn(53970.7) -> 58Fe+(53964) + e-(0.510999) + ~ve(0) + 6.24511[MeV/c^2]

P+ 6 BETA_MINUS
59Fe(54897.5) -> 59Co+(54895.4) + e-(0.510999) + ~ve(0) + 1.56538[MeV/c^2]

P+ 7 BETA_MINUS
59Mn(54902.7) -> 59Fe+(54897) + e-(0.510999) + ~ve(0) + 5.1833[MeV/c^2]
Time[11[Day]03:39:50 , 01[Month]01[D]11:23:30]

P+ 8 BETA_MINUS
60Co(55828) -> 60Ni+(55824.7) + e-(0.510999) + ~ve(0) + 2.82308[MeV/c^2]

P+ 9 BETA_MINUS
60Fe(55828.2) -> 60Co+(55827.5) + e-(0.510999) + ~ve(0) + 0.237438[MeV/c^2]

P+ 10 BETA_MINUS
60Mn(55836.5) -> 60Fe+(55827.7) + e-(0.510999) + ~ve(0) + 8.23254[MeV/c^2]

P+ 11 BETA_MINUS
61Co(56758.2) -> 61Ni+(56756.4) + e-(0.510999) + ~ve(0) + 1.32254[MeV/c^2]

P+ 12 BETA_MINUS
61Fe(56762.2) -> 61Co+(56757.7) + e-(0.510999) + ~ve(0) + 3.97673[MeV/c^2]

P+ 13 BETA_MINUS
62Co(57691.2) -> 62Ni+(57685.4) + e-(0.510999) + ~ve(0) + 5.31501[MeV/c^2]

P+ 14 BETA_MINUS
63Co(58622.3) -> 63Ni+(58618.1) + e-(0.510999) + ~ve(0) + 3.67251[MeV/c^2]

P+ 15 BETA_MINUS
63Ni(58618.6) -> 63Cu+(58618) + e-(0.510999) + ~ve(0) + 0.0669744[MeV/c^2]

P+ 16 BETA_MINUS
64Co(59555.8) -> 64Ni+(59548) + e-(0.510999) + ~ve(0) + 7.30664[MeV/c^2]

P+ 17 BETA_MINUS
64Cu(59550.2) -> 64Zn+(59549.1) + e-(0.510999) + ~ve(0) + 0.579389[MeV/c^2]
Time[03[Day]21:06:10 , 01[Month]01[D]11:30:50]

P+ 18 BETA_MINUS
65Ni(60482) -> 65Cu+(60479.3) + e-(0.510999) + ~ve(0) + 2.13759[MeV/c^2]

P+ 19 BETA_MINUS
66Cu(61412.3) -> 66Zn+(61409.2) + e-(0.510999) + ~ve(0) + 2.64116[MeV/c^2]

P+ 20 BETA_MINUS
66Ni(61412.6) -> 66Cu+(61411.8) + e-(0.510999) + ~ve(0) + 0.251969[MeV/c^2]
Time[27[Day]12:01:50 , 01[Month]01[D]11:25:50]

P+ 21 BETA_MINUS
T(2809.43) -> 3He+(2808.9) + e-(0.510999) + ~ve(0) + 0.0185913[MeV/c^2]

P+ 22 BETA_MINUS
n(939.565) -> p+(938.272) + e-(0.510999) + ~ve(0) + 0.782414[MeV/c^2]

P+ 23 COLLIDE_ELECTRON_BY_HIGH_VOLTAGE
58Co+(53966.3) + e-(0.510999) + (0 + x)[MeV] -> 58Fe(53964.5) + ve + (2.3075 + x)[MeV]

P+ 24 COLLIDE_ELECTRON_BY_HIGH_VOLTAGE
58Ni+(53965.9) + e-(0.510999) + (0.381819 + x)[MeV] -> 58Co(53966.8) + ve + (0 + x)[MeV]

P+ 25 COLLIDE_ELECTRON_BY_HIGH_VOLTAGE
59Ni+(54896.5) + e-(0.510999) + (0 + x)[MeV] -> 59Co(54895.9) + ve + (1.0728 + x)[MeV]

P+ 26 COLLIDE_ELECTRON_BY_HIGH_VOLTAGE
60Co+(55827.5) + e-(0.510999) + (0.237438 + x)[MeV] -> 60Fe(55828.2) + ve + (0 + x)[MeV]

P+ 27 COLLIDE_ELECTRON_BY_HIGH_VOLTAGE
63Cu+(58618) + e-(0.510999) + (0.0669744 + x)[MeV] -> 63Ni(58618.6) + ve + (0 + x)[MeV]
Time[24[Day]08:17:10 , 01[Month]01[D]11:30:50]

P+ 28 COLLIDE_ELECTRON_BY_HIGH_VOLTAGE
p+(938.272) + e-(0.510999) + (0.782414 + x)[MeV] -> n(939.565) + ve + (0 + x)[MeV]

P+ 29 COLLIDE_ELECTRON_BY_COMPTON_EFFECT
3He+(2808.9) + e-(0.510999) + (0.0185913 + x)[MeV] -> T(2809.43) + ve + (0 + x)[MeV]
Time[28[Day]11:37:20 , 01[Month]01[D]11:30:50]

P+ 30 COLLIDE_ELECTRON_BY_COMPTON_EFFECT
58Co+(53966.3) + e-(0.510999) + (0 + x)[MeV] -> 58Fe(53964.5) + ve + (2.3075 + x)[MeV]

P+ 31 COLLIDE_ELECTRON_BY_COMPTON_EFFECT
58Fe+(53964) + e-(0.510999) + (6.24511 + x)[MeV] -> 58Mn(53970.7) + ve + (0 + x)[MeV]

P+ 32 COLLIDE_ELECTRON_BY_COMPTON_EFFECT
58Ni+(53965.9) + e-(0.510999) + (0.381819 + x)[MeV] -> 58Co(53966.8) + ve + (0 + x)[MeV]

P+ 33 COLLIDE_ELECTRON_BY_COMPTON_EFFECT
59Co+(54895.4) + e-(0.510999) + (1.56538 + x)[MeV] -> 59Fe(54897.5) + ve + (0 + x)[MeV]

P+ 34 COLLIDE_ELECTRON_BY_COMPTON_EFFECT
59Fe+(54897) + e-(0.510999) + (5.1833 + x)[MeV] -> 59Mn(54902.7) + ve + (0 + x)[MeV]
Time[11[Day]03:39:30 , 01[Month]01[D]11:30:50]

P+ 35 COLLIDE_ELECTRON_BY_COMPTON_EFFECT
59Ni+(54896.5) + e-(0.510999) + (0 + x)[MeV] -> 59Co(54895.9) + ve + (1.0728 + x)[MeV]

P+ 36 COLLIDE_ELECTRON_BY_COMPTON_EFFECT
60Co+(55827.5) + e-(0.510999) + (0.237438 + x)[MeV] -> 60Fe(55828.2) + ve + (0 + x)[MeV]

P+ 37 COLLIDE_ELECTRON_BY_COMPTON_EFFECT
60Fe+(55827.7) + e-(0.510999) + (8.23254 + x)[MeV] -> 60Mn(55836.5) + ve + (0 + x)[MeV]
Time[02[Day]03:23:10 , 01[Month]01[D]11:30:50]

P+ 38 COLLIDE_ELECTRON_BY_COMPTON_EFFECT
60Ni+(55824.7) + e-(0.510999) + (2.82308 + x)[MeV] -> 60Co(55828) + ve + (0 + x)[MeV]

P+ 39 COLLIDE_ELECTRON_BY_COMPTON_EFFECT
61Ni+(56756.4) + e-(0.510999) + (1.32254 + x)[MeV] -> 61Co(56758.2) + ve + (0 + x)[MeV]

P+ 40 COLLIDE_ELECTRON_BY_COMPTON_EFFECT
62Ni+(57685.4) + e-(0.510999) + (5.31501 + x)[MeV] -> 62Co(57691.2) + ve + (0 + x)[MeV]

P+ 41 COLLIDE_ELECTRON_BY_COMPTON_EFFECT
63Cu+(58618) + e-(0.510999) + (0.0669744 + x)[MeV] -> 63Ni(58618.6) + ve + (0 + x)[MeV]

P+ 42 COLLIDE_ELECTRON_BY_COMPTON_EFFECT
63Ni+(58618.1) + e-(0.510999) + (3.67251 + x)[MeV] -> 63Co(58622.3) + ve + (0 + x)[MeV]

P+ 43 COLLIDE_ELECTRON_BY_COMPTON_EFFECT
64Cu+(59549.7) + e-(0.510999) + (0 + x)[MeV] -> 64Ni(59548.5) + ve + (1.67501 + x)[MeV]

P+ 44 COLLIDE_ELECTRON_BY_COMPTON_EFFECT
64Ni+(59548) + e-(0.510999) + (7.30664 + x)[MeV] -> 64Co(59555.8) + ve + (0 + x)[MeV]

P+ 45 COLLIDE_ELECTRON_BY_COMPTON_EFFECT
65Cu+(60479.3) + e-(0.510999) + (2.13759 + x)[MeV] -> 65Ni(60482) + ve + (0 + x)[MeV]

P+ 46 COLLIDE_ELECTRON_BY_COMPTON_EFFECT
66Zn+(61409.2) + e-(0.510999) + (2.64116 + x)[MeV] -> 66Cu(61412.3) + ve + (0 + x)[MeV]
Time[26[Day]13:58:30 , 01[Month]01[D]11:30:50]

P+ 47 COLLIDE_ELECTRON_BY_COMPTON_EFFECT
d+(1875.61) + e-(0.510999) + (3.00705 + x)[MeV] -> 2n(1879.13) + ve + (0 + x)[MeV]

P+ 48 COLLIDE_ELECTRON_BY_COMPTON_EFFECT
p+(938.272) + e-(0.510999) + (0.782414 + x)[MeV] -> n(939.565) + ve + (0 + x)[MeV]

P+ 49 COLLIDE_NEUTRON
3He(2809.41) + n(939.565) -> 4He(3728.4) + 20.5777[MeV]
Time[26[Day]00:38:40 , 01[Month]01[D]11:30:50]

P+ 50 COLLIDE_NEUTRON
58Co(53966.8) + n(939.565) -> 59Co(54895.9) + 10.454[MeV]

P+ 51 COLLIDE_NEUTRON
58Fe(53964.5) + n(939.565) -> 59Fe(54897.5) + 6.58109[MeV]

P+ 52 COLLIDE_NEUTRON
58Ni(53966.4) + n(939.565) -> 59Ni(54897) + 8.99934[MeV]

P+ 53 COLLIDE_NEUTRON

59Co(54895.9) + n(939.565) -> 60Co(55828) + 7.4919[MeV]

P+ 54 COLLIDE_NEUTRON
59Fe(54897.5) + n(939.565) -> 60Fe(55828.2) + 8.81984[MeV]
Time[02[Day]14:27:20 , 01[Month]01[D]11:30:50]

P+ 55 COLLIDE_NEUTRON
59Ni(54897) + n(939.565) -> 60Ni(55825.2) + 11.3878[MeV]

P+ 56 COLLIDE_NEUTRON
60Co(55828) + n(939.565) -> 61Co(56758.2) + 9.3208[MeV]

P+ 57 COLLIDE_NEUTRON
60Fe(55828.2) + n(939.565) -> 61Fe(56762.2) + 5.5815[MeV]

P+ 58 COLLIDE_NEUTRON
60Ni(55825.2) + n(939.565) -> 61Ni(56756.9) + 7.82025[MeV]

P+ 59 COLLIDE_NEUTRON
61Co(56758.2) + n(939.565) -> 62Co(57691.2) + 6.6041[MeV]
Time[24[Day]12:38:00 , 01[Month]01[D]11:30:50]

P+ 60 COLLIDE_NEUTRON
61Ni(56756.9) + n(939.565) -> 62Ni(57685.9) + 10.5966[MeV]

P+ 61 COLLIDE_NEUTRON
62Ni(57685.9) + n(939.565) -> 63Ni(58618.6) + 6.83781[MeV]

P+ 62 COLLIDE_NEUTRON
63Cu(58618.5) + n(939.565) -> 64Cu(59550.2) + 7.9161[MeV]
Time[02[Day]23:34:50 , 01[Month]01[D]11:30:50]

P+ 63 COLLIDE_NEUTRON
63Ni(58618.6) + n(939.565) -> 64Ni(59548.5) + 9.65809[MeV]

P+ 64 COLLIDE_NEUTRON
64Cu(59550.2) + n(939.565) -> 65Cu(60479.8) + 9.91081[MeV]
Time[01[Month]00[D]13:03:20 , 01[Month]01[D]11:30:50]

P+ 65 COLLIDE_NEUTRON
64Ni(59548.5) + n(939.565) -> 65Ni(60482) + 6.0982[MeV]

P+ 66 COLLIDE_NEUTRON

64Zn(59549.6) + n(939.565) -> 65Zn(60481.2) + 7.97935[MeV]
Time[27[Day]14:58:10 , 01[Month]01[D]11:30:50]

P+ 67 COLLIDE_NEUTRON
65Cu(60479.8) + n(939.565) -> 66Cu(61412.3) + 7.06602[MeV]

P+ 68 COLLIDE_NEUTRON
65Ni(60482) + n(939.565) -> 66Ni(61412.6) + 8.95165[MeV]
Time[27[Day]10:27:40 , 01[Month]01[D]11:30:50]

P+ 69 COLLIDE_NEUTRON
66Zn(61409.7) + n(939.565) -> 67Zn(62342.2) + 7.05242[MeV]
Time[10[Day]04:42:10 , 01[Month]01[D]11:30:50]

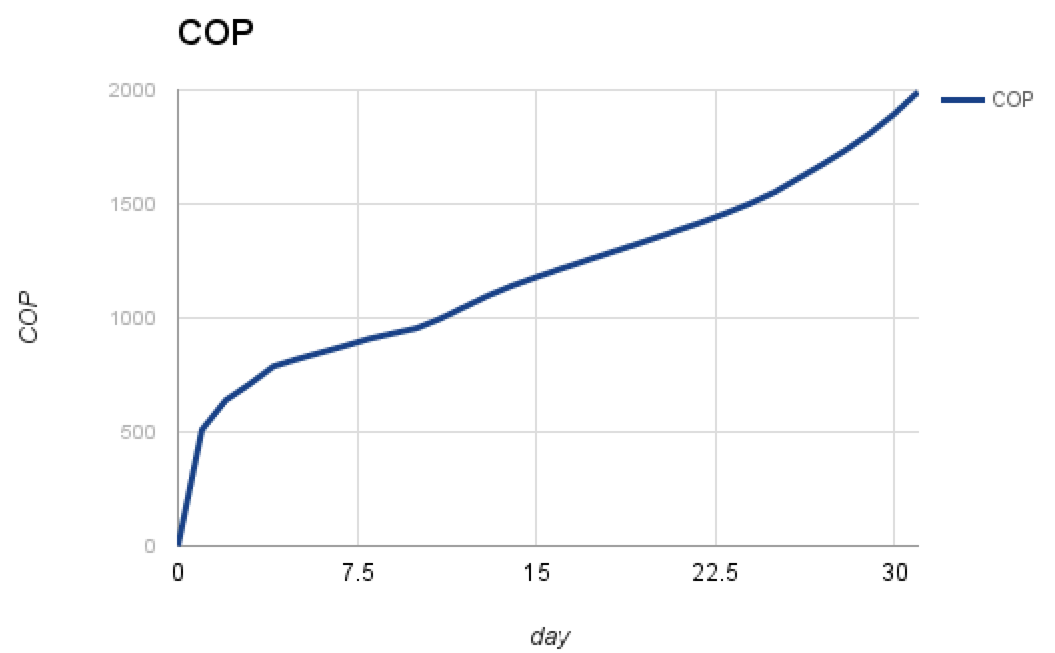
P+ 70 COLLIDE_NEUTRON
67Zn(62342.2) + n(939.565) -> 68Zn(63271.6) + 10.1981[MeV]
Time[01[Month]00[D]17:14:00 , 01[Month]01[D]11:30:50]

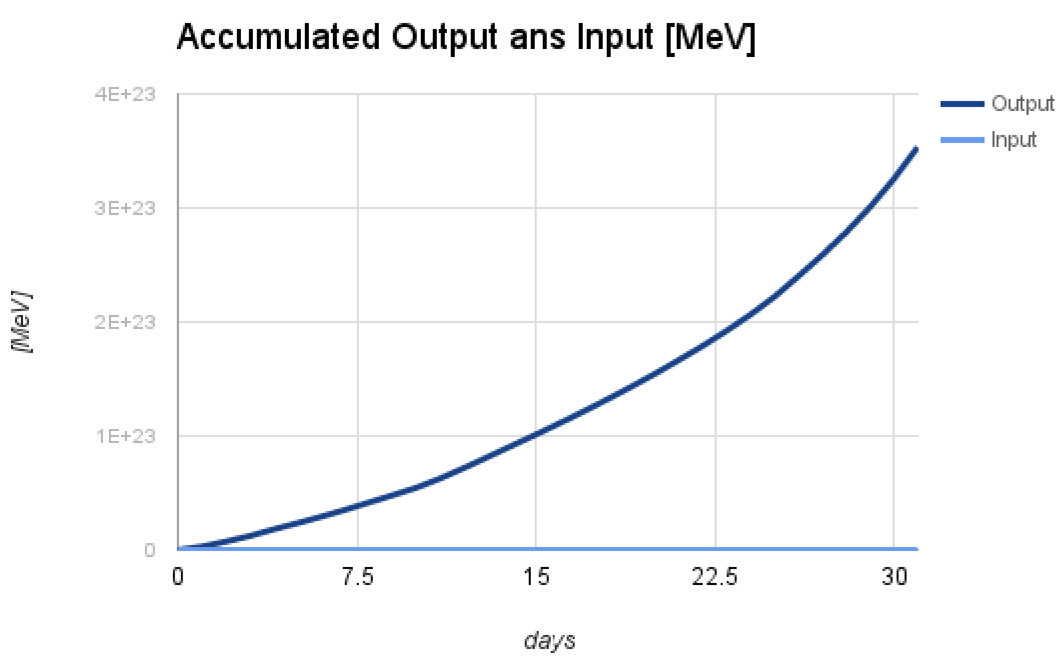
P+ 71 COLLIDE_NEUTRON
D(1876.12) + n(939.565) -> T(2809.43) + 6.2573[MeV]

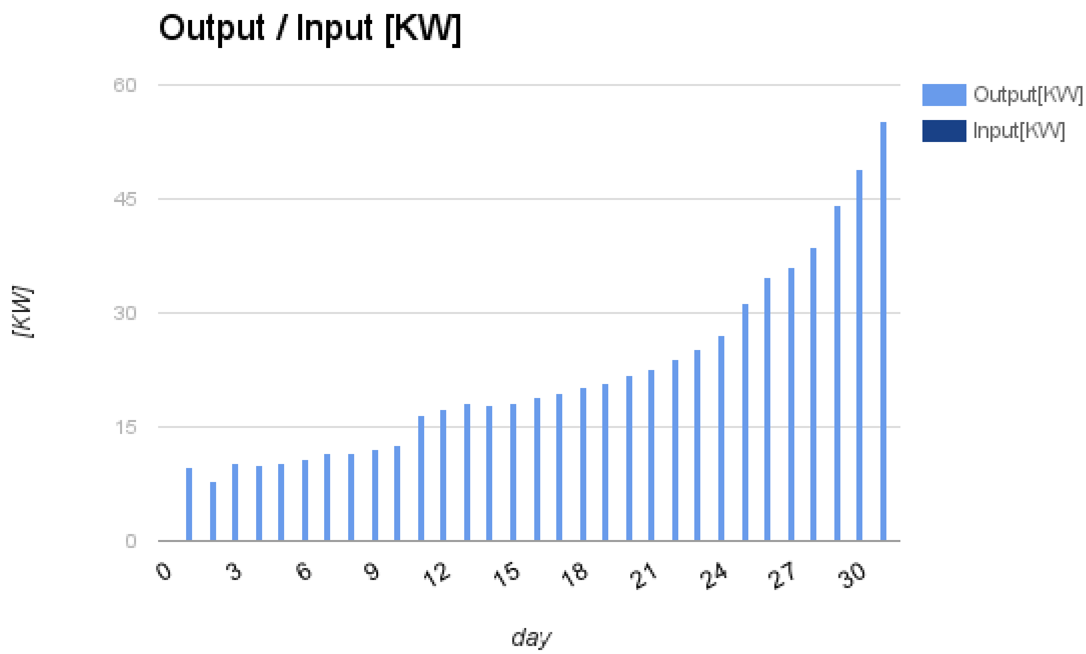
P+ 72 COLLIDE_NEUTRON
H(938.783) + n(939.565) -> D(1876.12) + 2.22463[MeV]

5.4 Charts

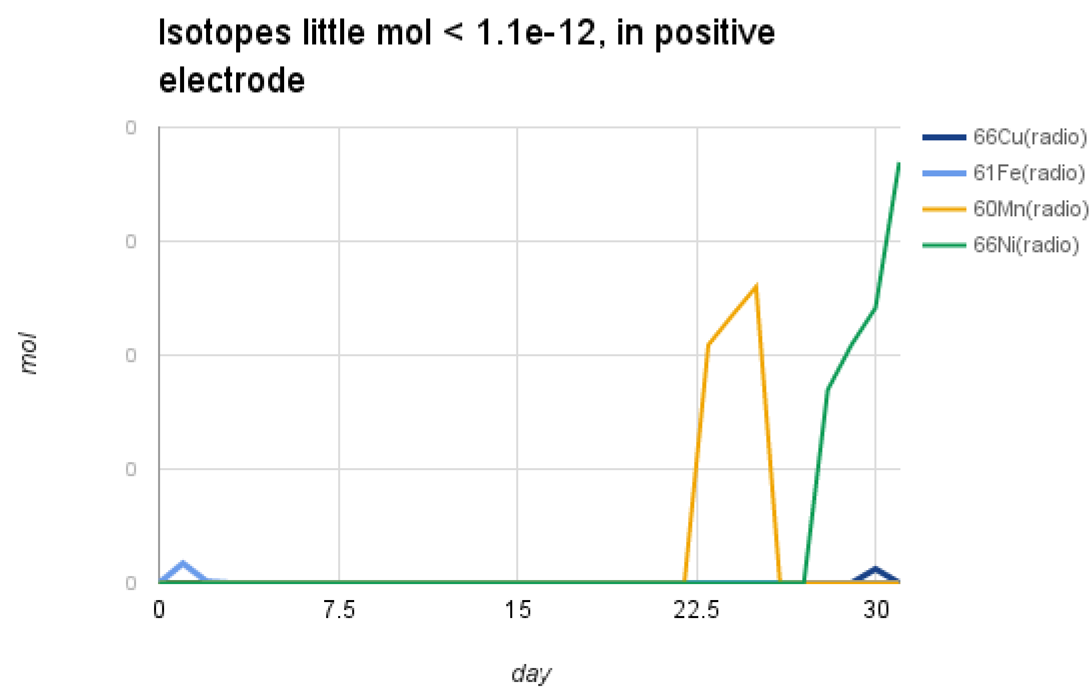
The data is “Simulation of the neutron generator - analyzed data 2 SHINSUKE ONO”[2].


COP
2000
1500
1000
500
0
COP
0
7.5
15
22.5
30
day
COP

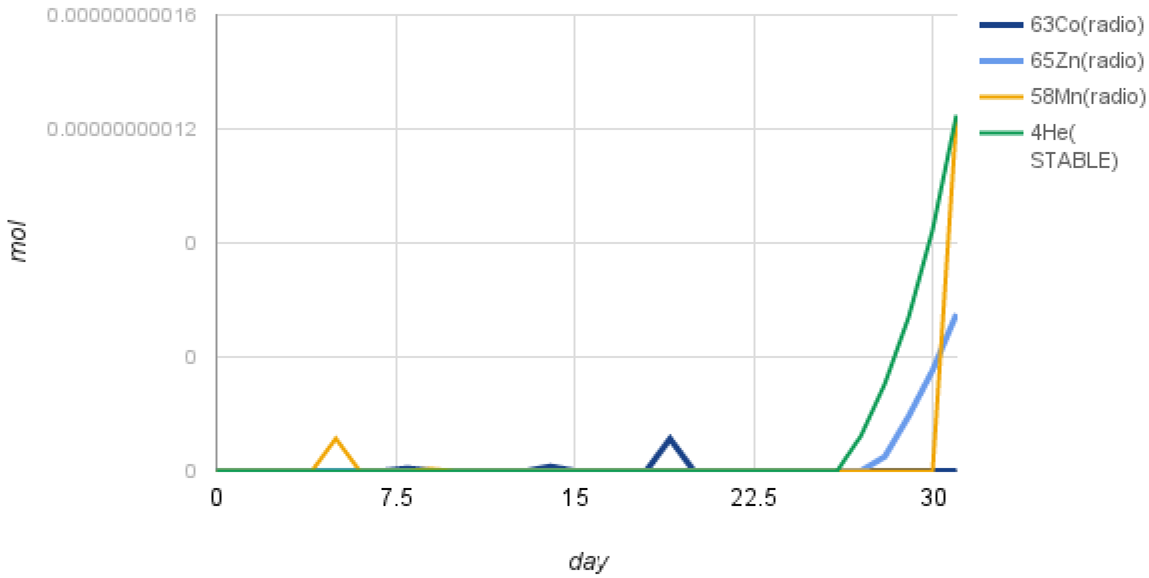

Accumulated Output ans Input [MeV]
4E+23
3E+23
2E+23
1E+23
0
[MeV]
0
7.5
15
22.5
30
days
Output
Input



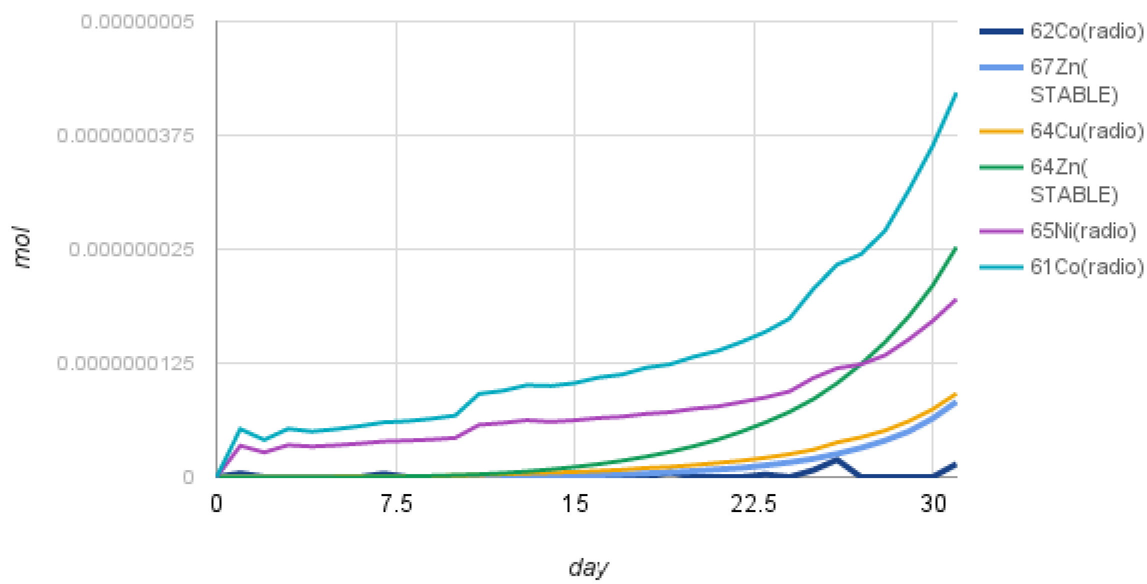
Positive electrode isotopes

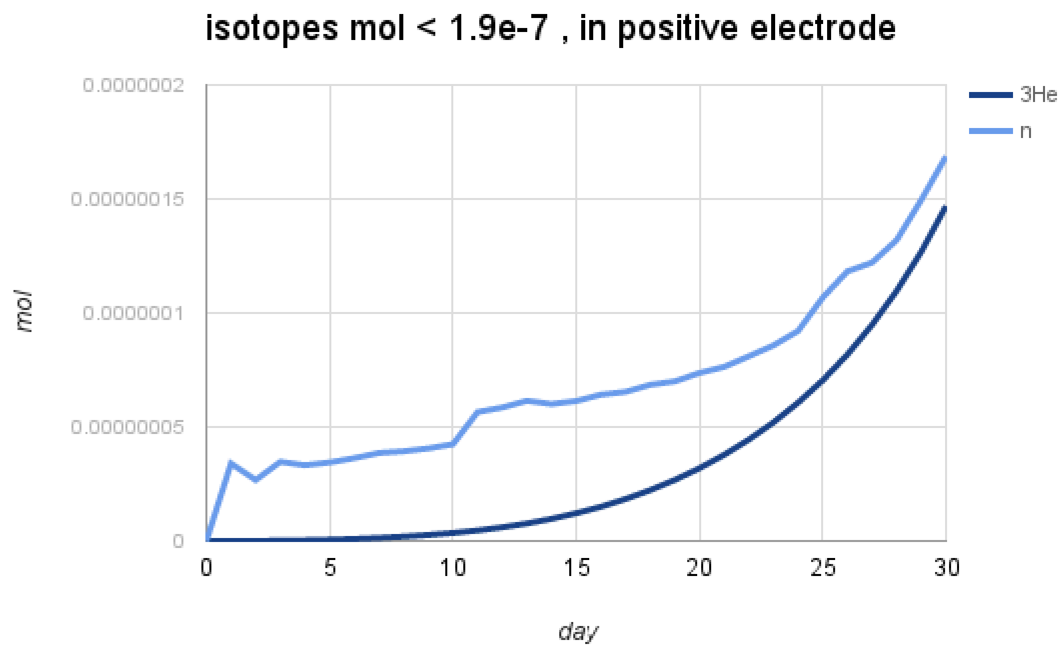


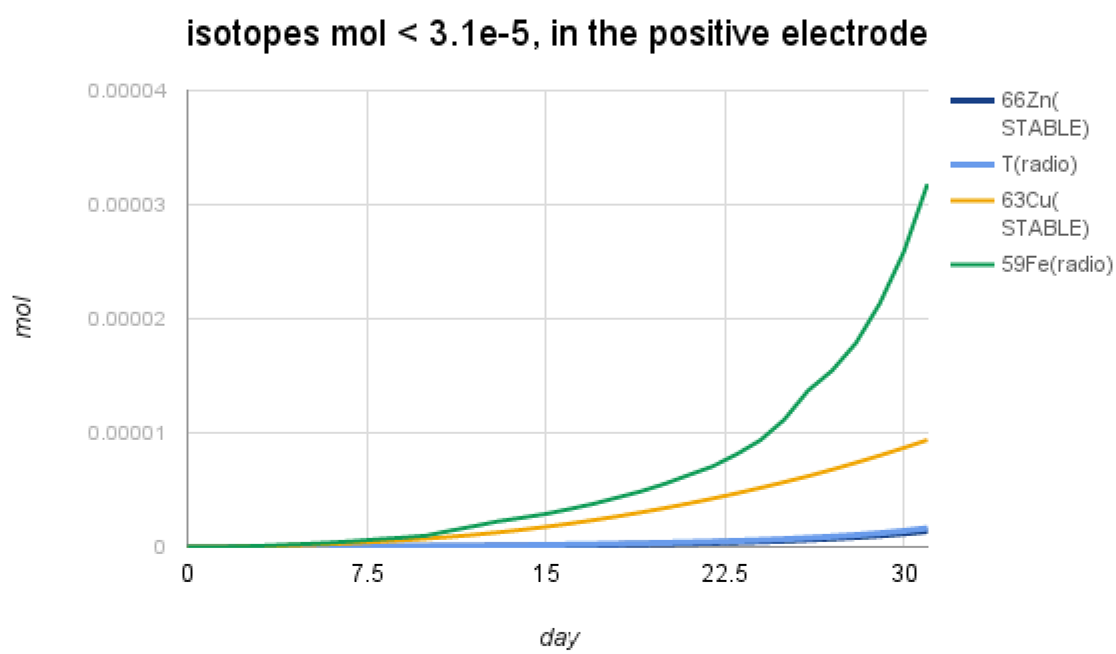
isotopes little mol < 1.2e-10, in positive electrode

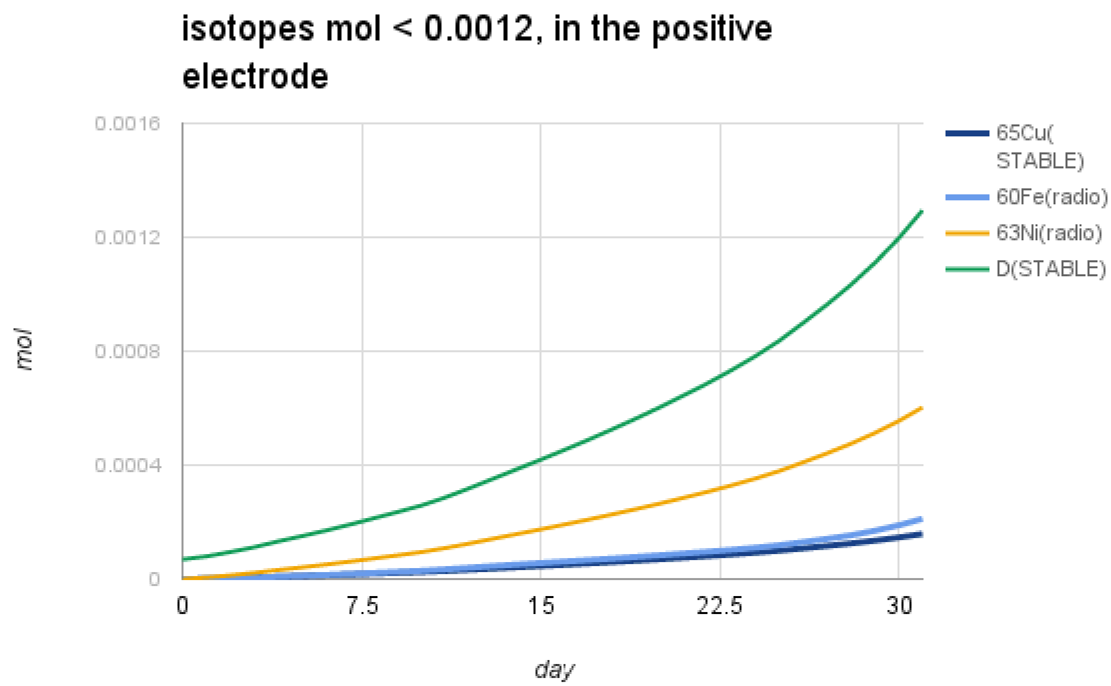


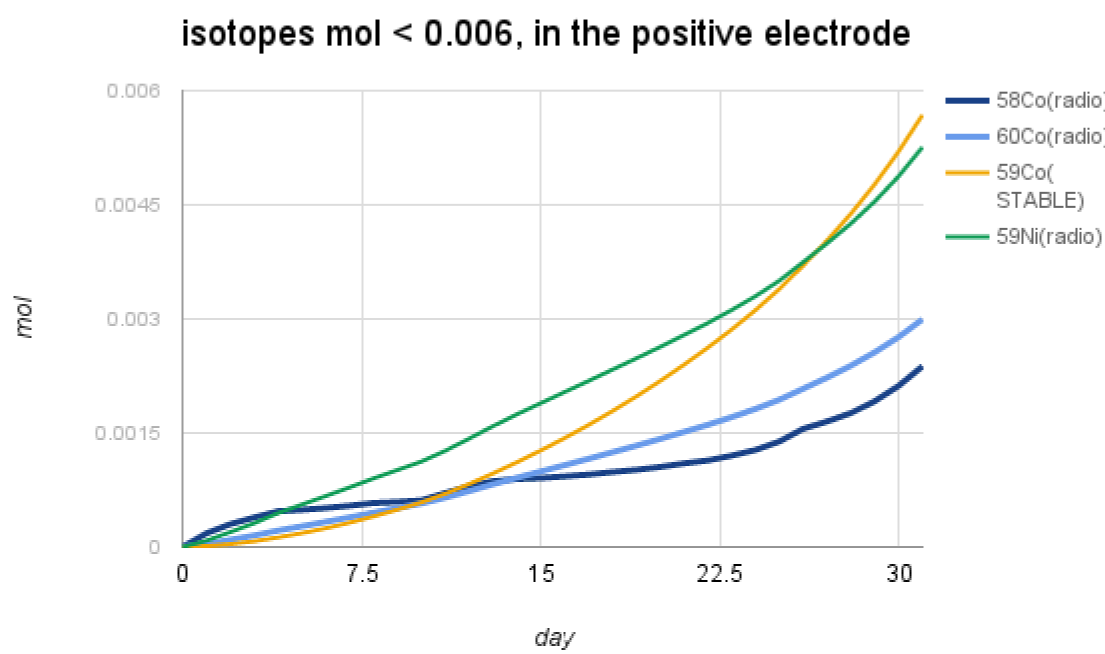
isotopes little mol < 4.2e-8, in positive electrode

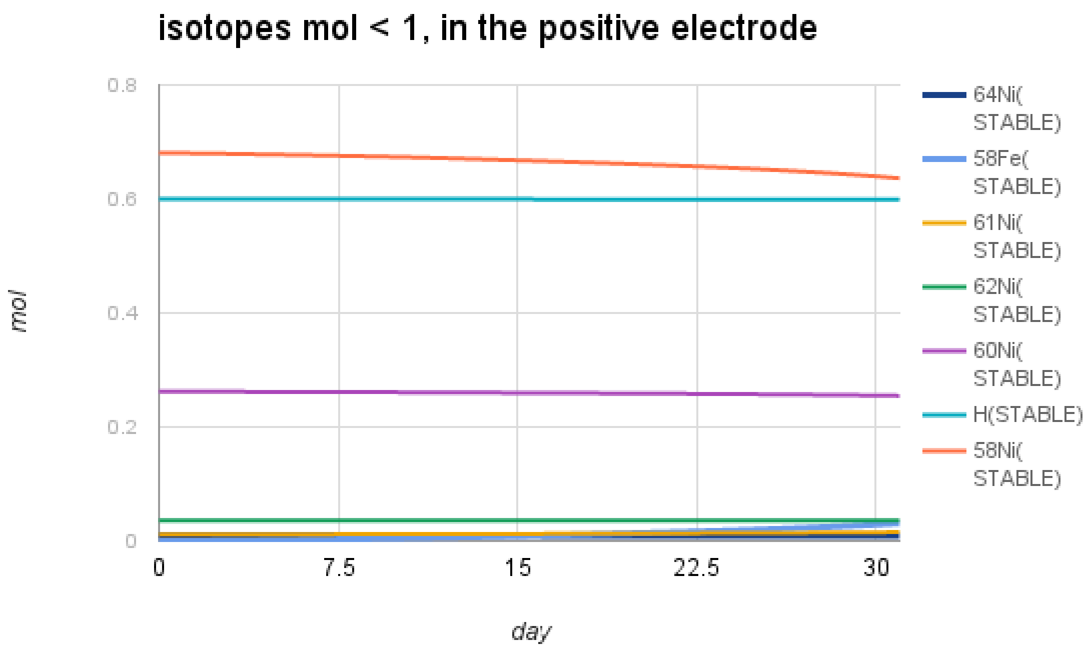



isotopes mol < 1.9e-7 , in positive electrode
0.0000002
0.00000015
0.0000001
0.00000005
0
mol
0
5
10
15
20
25
30
day
3He
n

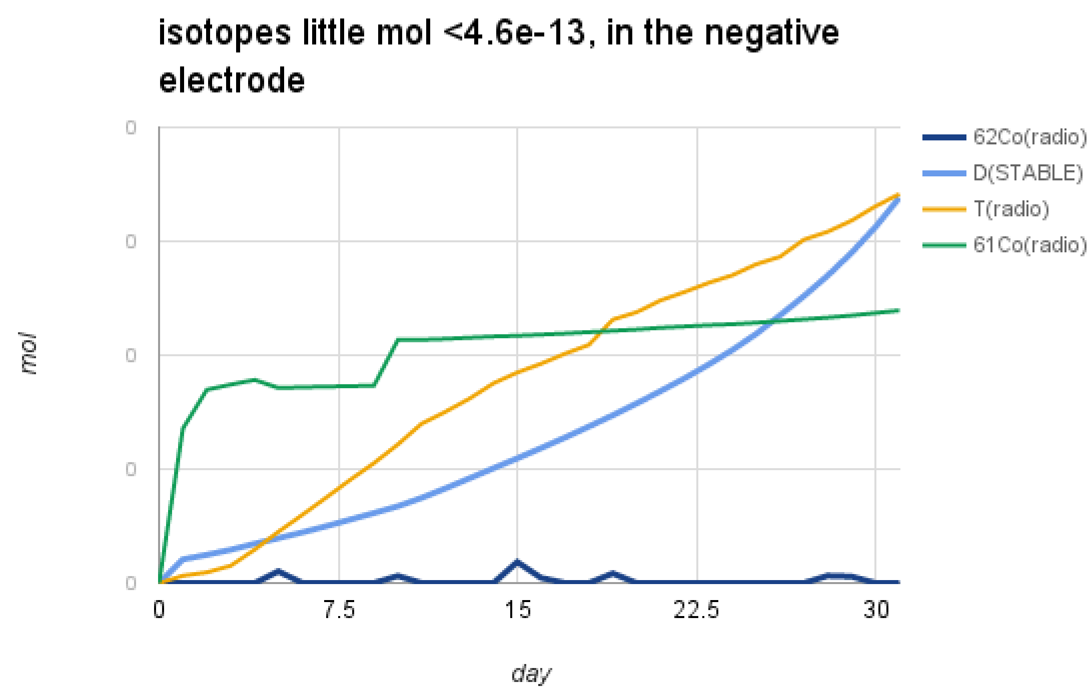

isotopes mol < 3.1e-5, in the positive electrode
0.00004
0.00003
0.00002
0.00001
0
mol
0
7.5
15
22.5
30
day
66Zn(STABLE)
T(radio)
63Cu(STABLE)
59Fe(radio)

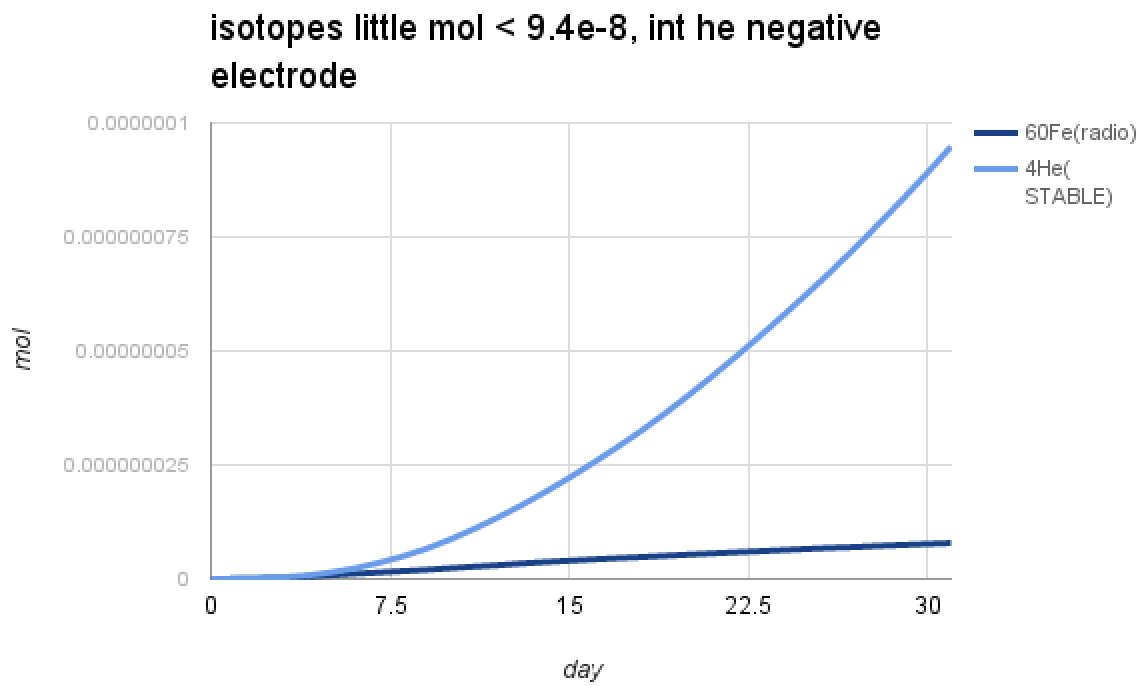

isotopes mol < 0.0012, in the positive electrode
0.0016
0.0012
0.0008
0.0004
0
mol
0
7.5
15
22.5
30
day
65Cu(STABLE)
60Fe(radio)
63Ni(radio)
D(STABLE)

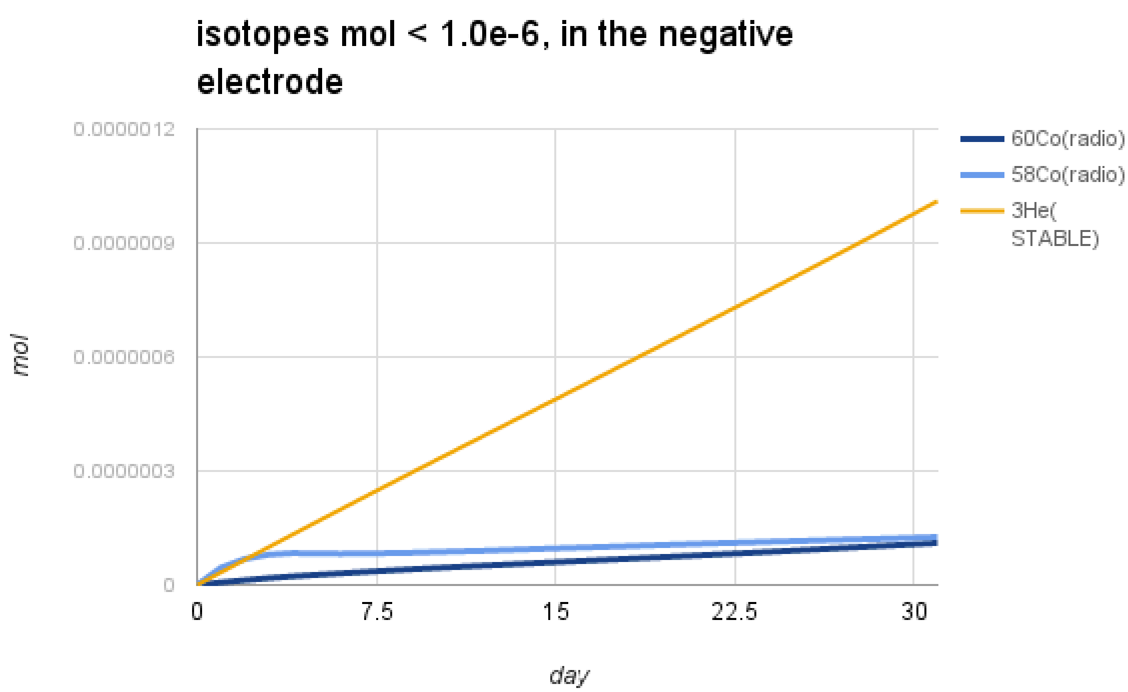

isotopes mol < 0.006, in the positive electrode
0.006
0.0045
0.003
0.0015
0
mol
0
7.5
15
22.5
30
day
58Co(radio)
60Co(radio)
59Co(STABLE)
59Ni(radio)

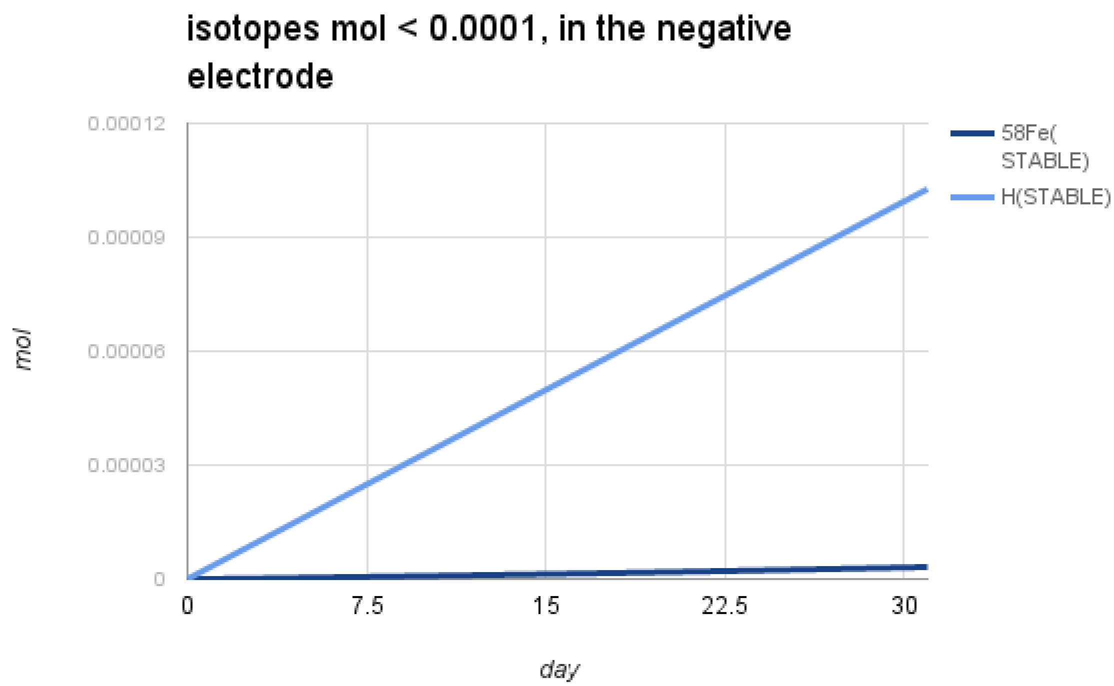


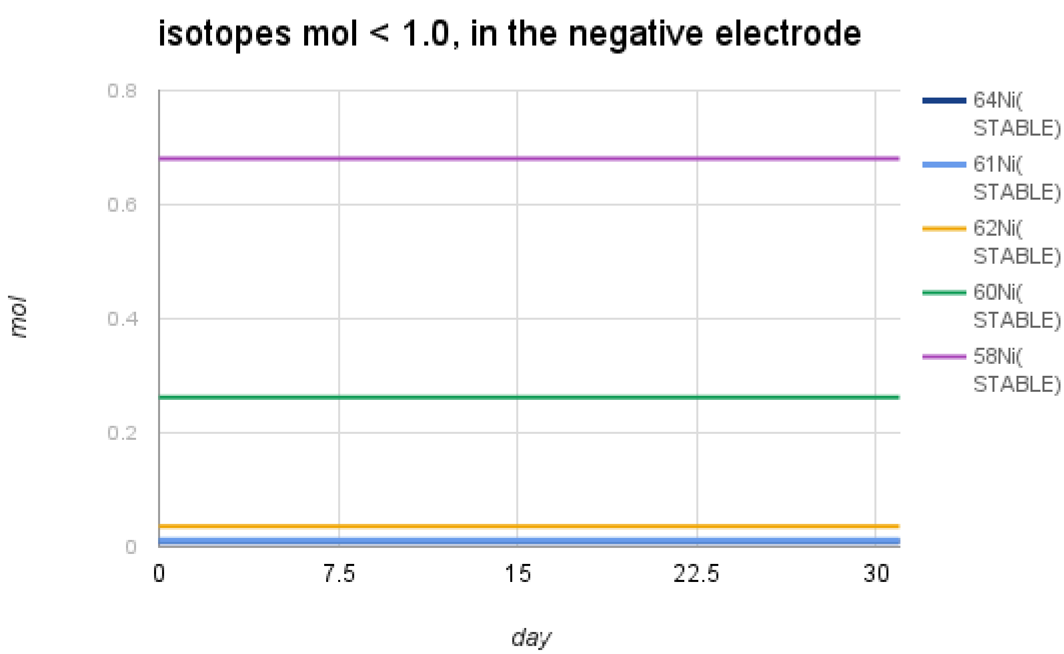
Negative electrode




isotopes little mol < 9.4e-8, int he negative electrode
0.0000001
0.000000075
0.00000005
0.000000025
0
mol
0
7.5
15
22.5
30
day
60Fe(radio)
4He(STABLE)


isotopes mol < 1.0e-6, in the negative electrode
0.0000012
0.0000009
0.0000006
0.0000003
0
mol
0
7.5
15
22.5
30
day
60Co(radio)
58Co(radio)
3He(STABLE)


isotopes mol < 0.0001, in the negative electrode
0.00012
0.00009
0.00006
0.00003
0
mol
0
7.5
15
22.5
30
day
58Fe(STABLE)
H(STABLE)


isotopes mol < 1.0, in the negative electrode
0.8
0.6
0.4
0.2
0
mol
0
7.5
15
22.5
30
day
64Ni(STABLE)
61Ni(STABLE)
62Ni(STABLE)
60Ni(STABLE)
58Ni(STABLE)

References

[1] Simulation of the neutron generator (SHINSUKE ONO, KOUSHIRYOKU Lab. Ltd. Jun. 29, 2016, Japan)
https://docs.google.com/document/d/1TsQMzBoiuBigVuuarHtE1W8KgZdvWOPOg13IX2DVBiI/edit?usp=sharing

[2] Simulation of the neutron generator - analyzed data 2 SHINSUKE ONO
https://drive.google.com/file/d/0B9XiZ4qRP7bZYk05a2ZPYmxqUU0/view?usp=sharing