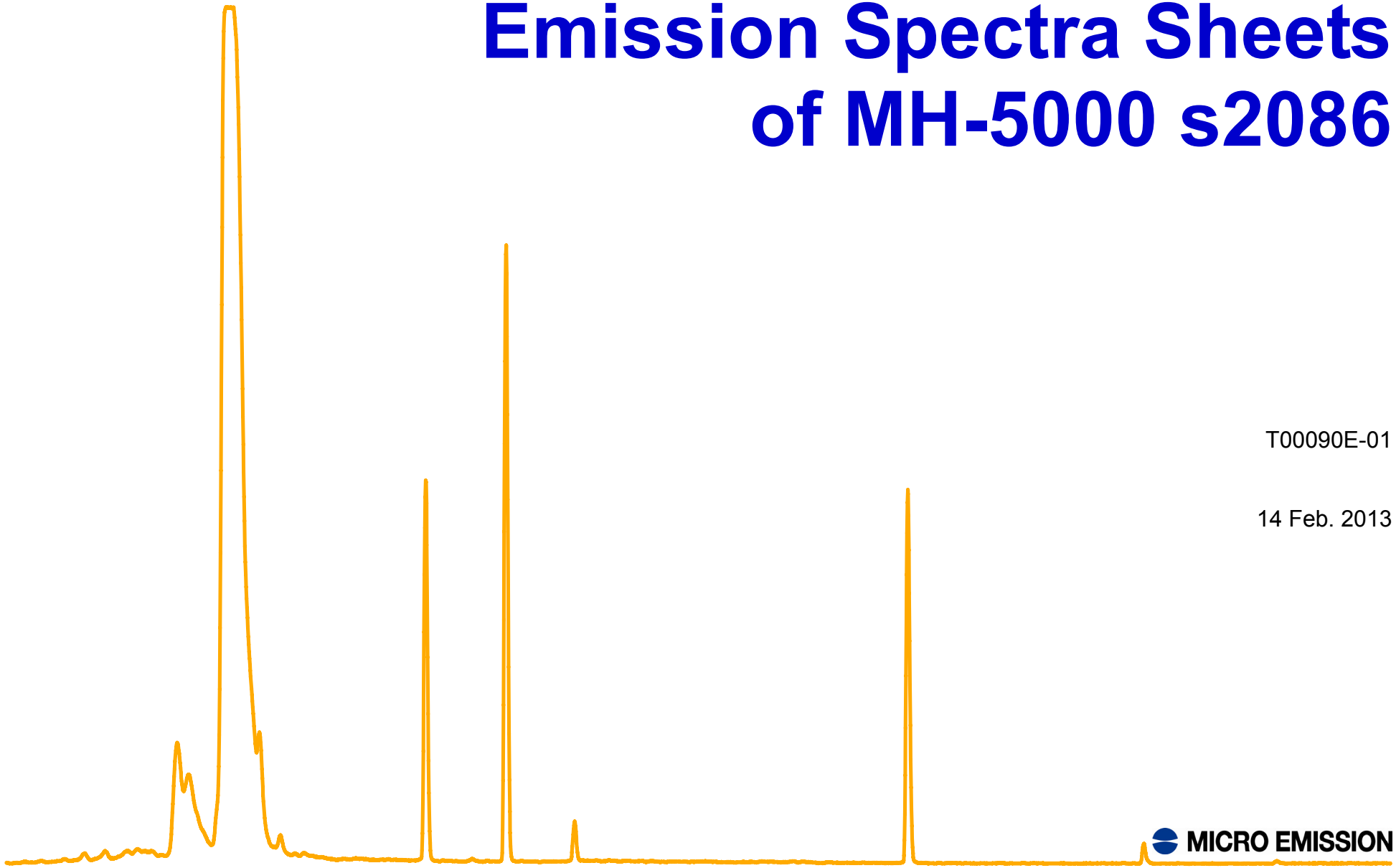
Emission Spectra Sheets of MH-5000 s2086



T00090E-01

14 Feb. 2013

MICRO EMISSION

Purpose: These sheets show emission peaks at each element. You can compare peaks of same element and other elements.

Caution: Because spectra depends instrument and quvette, these sheets are only one sample data.

Instrument: MH-5000 series

Solution: Pure solvent or 1000 mg/L single element standatd and diluted solution with same solvent.

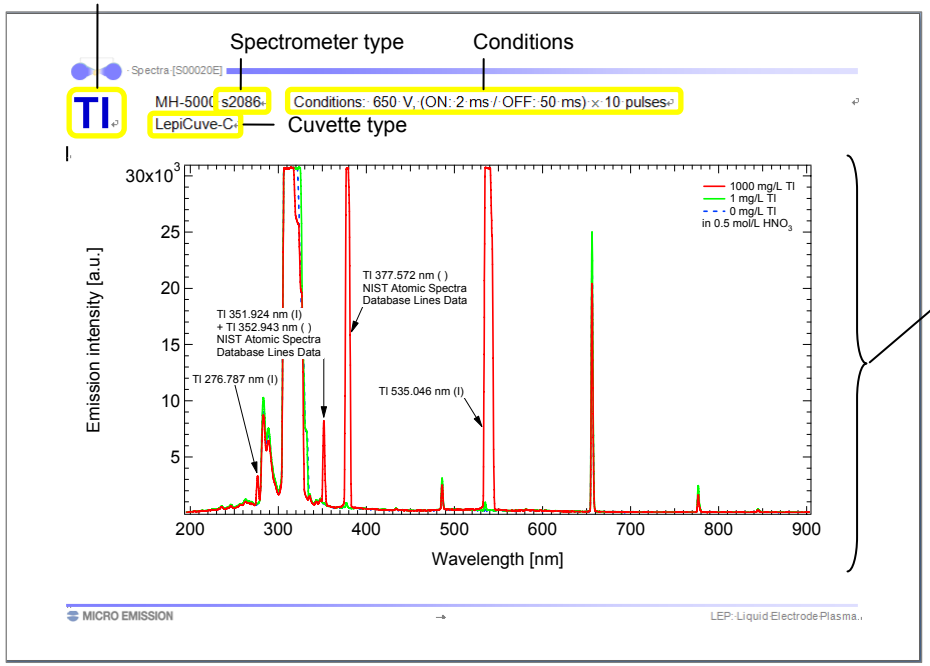
In case of low electrical conductivity or alkaline, acid is added to the solution.

More than 1000 mg/L Na, K, Mg, Ca and I solution are produced by NaCl, KCl, $MgCl_2$, $CaCl_2$ and KI.

Caution: High concentration Cr or Fe cause trouble because they produce oxide in narrow channel.

Conditions: Voltage, charged term and iteration count are adjusted. They depend on spectrometer, quvette, solution and peak height.

Note:



Ref.

Atomic emission (Atomic line and Ionic line) :
Phelps, F. M., III. M.I.T. Wavelength Tables Vol. 2: Wavelengths by Element; The MIT Press: Cambridge, MA, 1982

Molecure spectra:
Pearse, R.W.B. and Gaydon, A.G., THE IDENTIFICATION OF MOLECULAR SPECTRA, Chapman and Hall, London, 1976

Vertical axis: Emission intensity [a.u.]
Horizontal axis: Wavelength [nm]

Example 1: Simple line
Tl 535.046 nm (I)

- Tl: Element name or molecular name
- 535.046: Wavelength
- nm: No note at molecular peak
- (I): Emission type
  - (I) Atomic line
  - (II) Ionic line
  - ( ) Unknown

Example 2: Multiple lines
Tl 351.924 nm (I) + Tl 352.943 nm ( )

Emission Spectra Sheets of MH-5000 s2086

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	H																	He
2	**Li**	Be											**B**	C	N	O	F	Ne
3	**Na**	**Mg**											**Al**	Si	**P**	S	Cl	Ar
4	**K**	**Ca**	**Sc**	Ti	V	**Cr**	**Mn**	**Fe**	**Co**	**Ni**	**Cu**	**Zn**	**Ga**	**Ge**	**As**	**Se**	Br	Kr
5	**Rb**	**Sr**	Y	Zr	Nb	**Mo**	Tc	**Ru**	**Rh**	**Pd**	**Ag**	**Cd**	**In**	**Sn**	**Sb**	**Te**	**I**	Xe
6	**Cs**	**Ba**	*	Hf	Ta	W	Re	Os	Ir	**Pt**	**Au**	**Hg**	**Tl**	**Pb**	**Bi**	Po	At	Rn
7	Fr	Ra	**															

*	**La**	Ce	Pr	Nd	Pm	Sm	**Eu**	Gd	**Tb**	Dy	Ho	Er	Tm	**Yb**	Lu
**	Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr

Explanatory notes

Li	Detected
I	Detected, small peak
Be	Not detected
H	Unmeasured

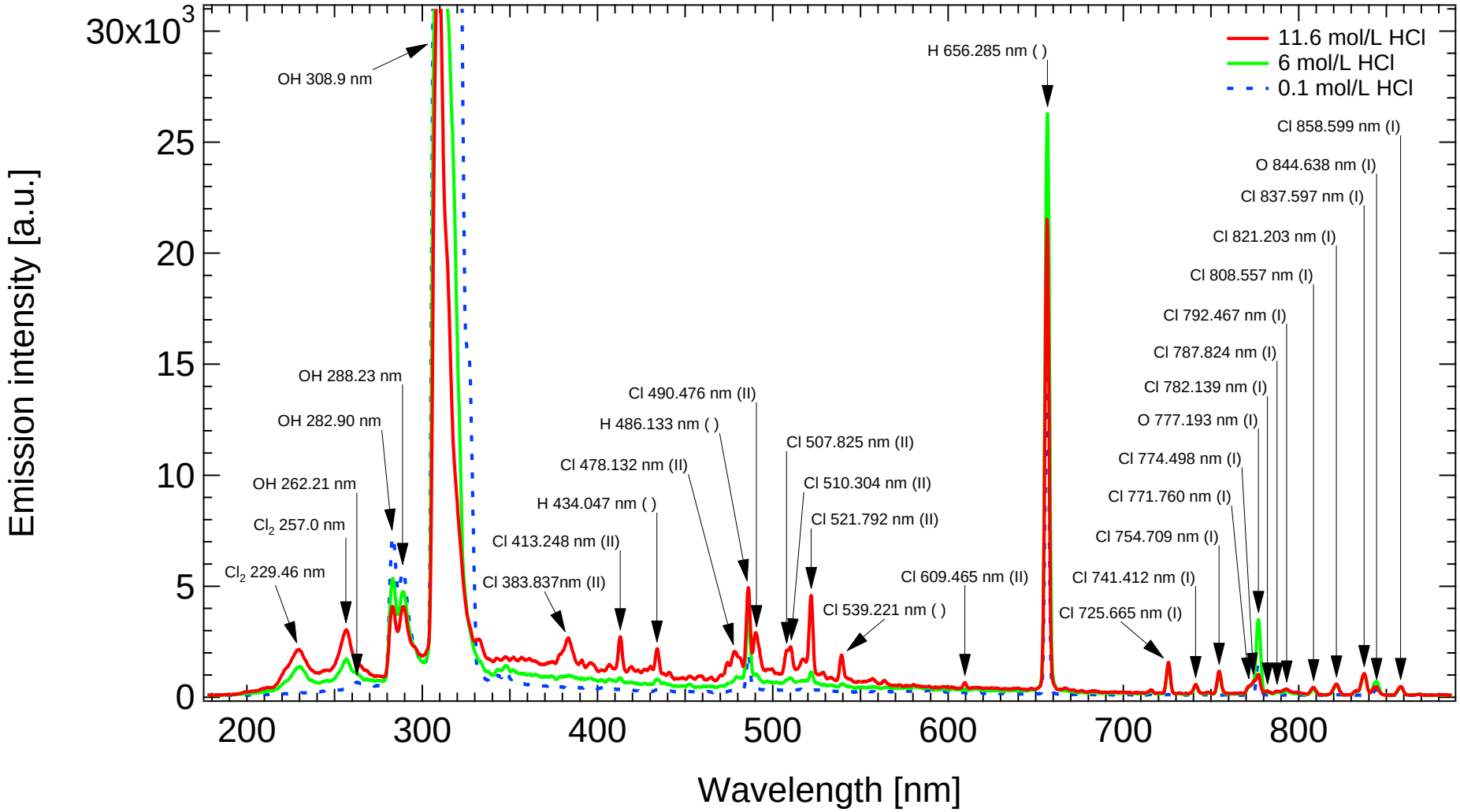
Name	Note	Reviced
HCl	Solvent	14 Feb. 2013
HNO_3	Solvent	14 Feb. 2013
H_2SO_4	Solvent	14 Feb. 2013
Ag		14 Feb. 2013
Al		14 Feb. 2013
As		14 Feb. 2013
Au		14 Feb. 2013
B		14 Feb. 2013
Ba		14 Feb. 2013
Be	Not detected. Detected with s2035.	14 Feb. 2013
Bi		14 Feb. 2013
Ca - 1	Low concentration	14 Feb. 2013
Ca - 2	High concentration	14 Feb. 2013
Cd		14 Feb. 2013
Co		14 Feb. 2013
Cr	Be careful about generation of oxide.	14 Feb. 2013
Cs		14 Feb. 2013
Cu	Caution: OH 308.9 nm maybe overlap.	14 Feb. 2013
Eu		14 Feb. 2013
Fe	Be careful about generation of oxide.	14 Feb. 2013
Ga		14 Feb. 2013
Ge	Detected, small peak	14 Feb. 2013
Hg		14 Feb. 2013
I	Detected, in case of more than 1000 mg/L.	14 Feb. 2013
In		14 Feb. 2013
Ir	Not detected. Detected with s2035.	14 Feb. 2013
K - 1	Low concentration	14 Feb. 2013
K - 2	High concentration	14 Feb. 2013

Name	Note	Reviced
La	Detected, small peak	14 Feb. 2013
Li		14 Feb. 2013
Mg - 1	Low concentration	14 Feb. 2013
Mg - 2	High concentration. Detected, unknown peaks	14 Feb. 2013
Mn		14 Feb. 2013
Mo		14 Feb. 2013
Na - 1	Low concentration	14 Feb. 2013
Na - 2	High concentration	14 Feb. 2013
Ni		14 Feb. 2013
P		14 Feb. 2013
Pb		14 Feb. 2013
Pd		14 Feb. 2013
Pt		14 Feb. 2013
Rb		14 Feb. 2013
Rh		14 Feb. 2013
Ru		14 Feb. 2013
Sb		14 Feb. 2013
Sc		14 Feb. 2013
Se		14 Feb. 2013
Sn		14 Feb. 2013
Sr		14 Feb. 2013
Tb	Detected, small peak	14 Feb. 2013
Te		14 Feb. 2013
Tl		14 Feb. 2013
Y	Detected, small molecular spectra	14 Feb. 2013
Yb		14 Feb. 2013
Zn		14 Feb. 2013

HCl

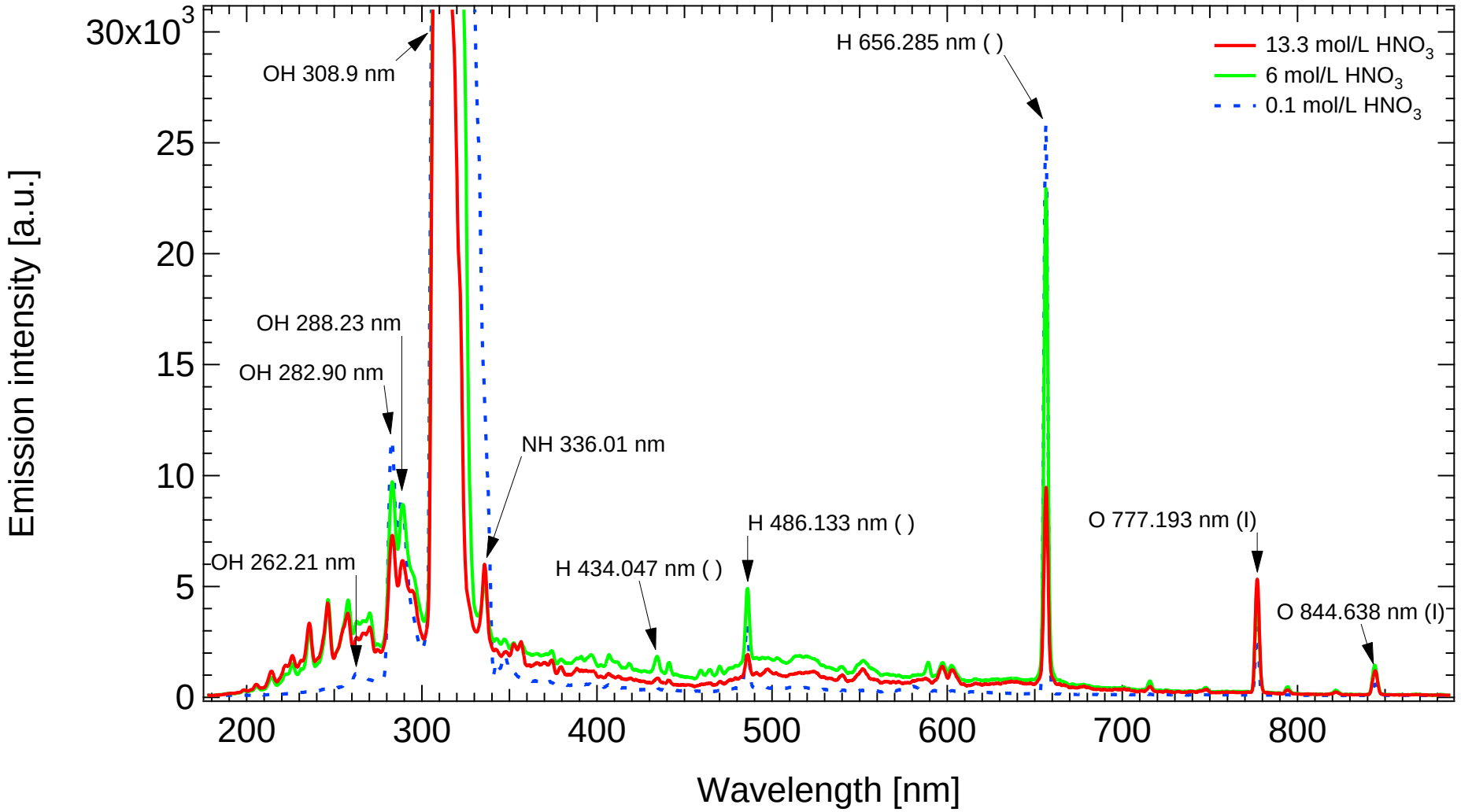
MH-5000 s2086 LepiCuve-C

Conditions:
500 V, (ON: 1 ms / OFF: 120 ms) × 60 pulses ... 11.6 mol/L
600 V, (ON: 2 ms / OFF: 130 ms) × 20 pulses ... 6 mol/L
750 V, (ON: 2 ms / OFF: 40 ms) × 20 pulses ... 0.1 mol/L



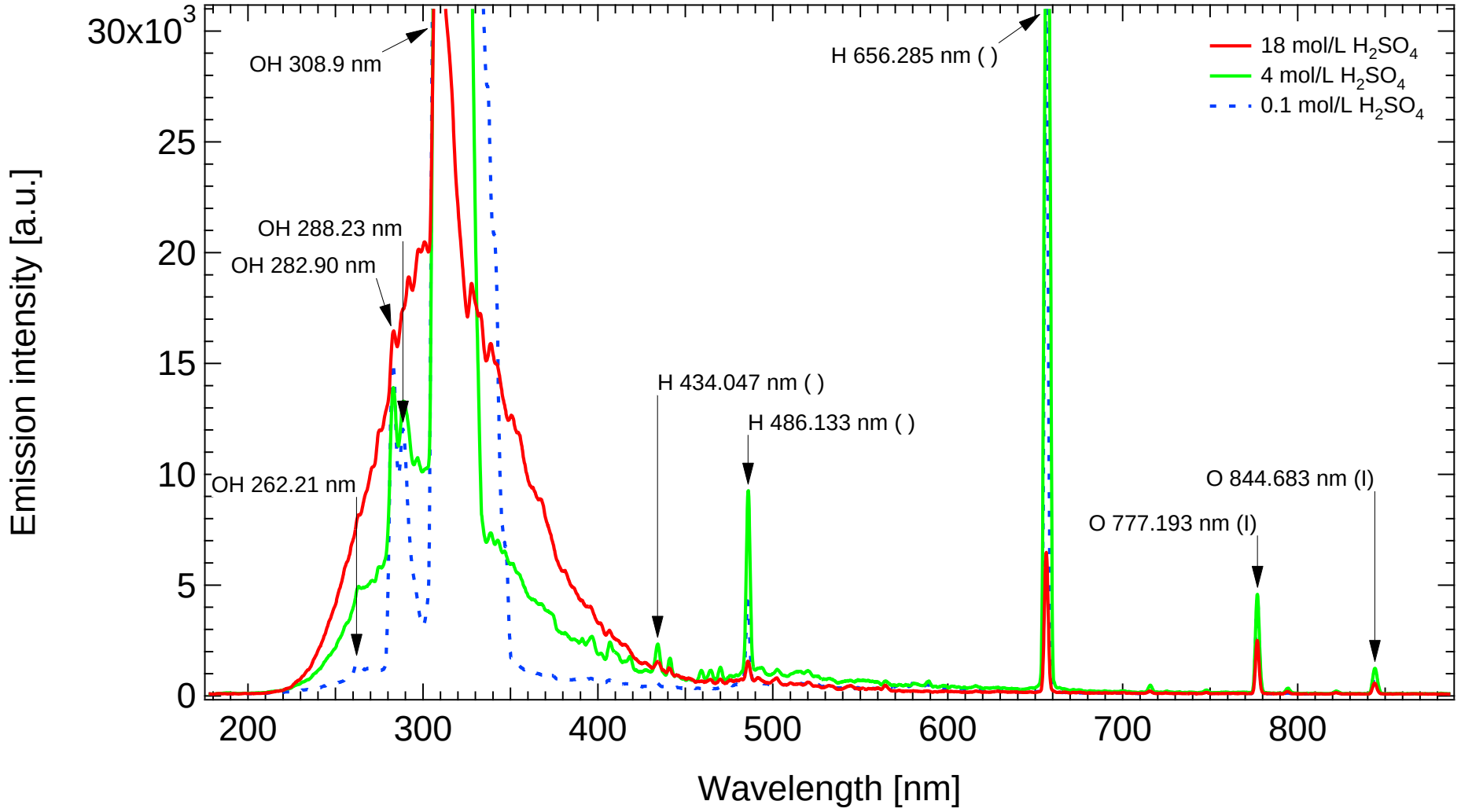
HNO_3

MH-5000 s2086 Conditions: 650 V, (ON: 2 ms / OFF: 80 ms) × 40 pulses ... 13.3 mol/L
LepiCuve-C 600 V, (ON: 2 ms / OFF: 120 ms) × 50 pulses ... 6 mol/L
750 V, (ON: 2 ms / OFF: 40 ms) × 20 pulses ... 0.1 mol/L



H_2SO_4

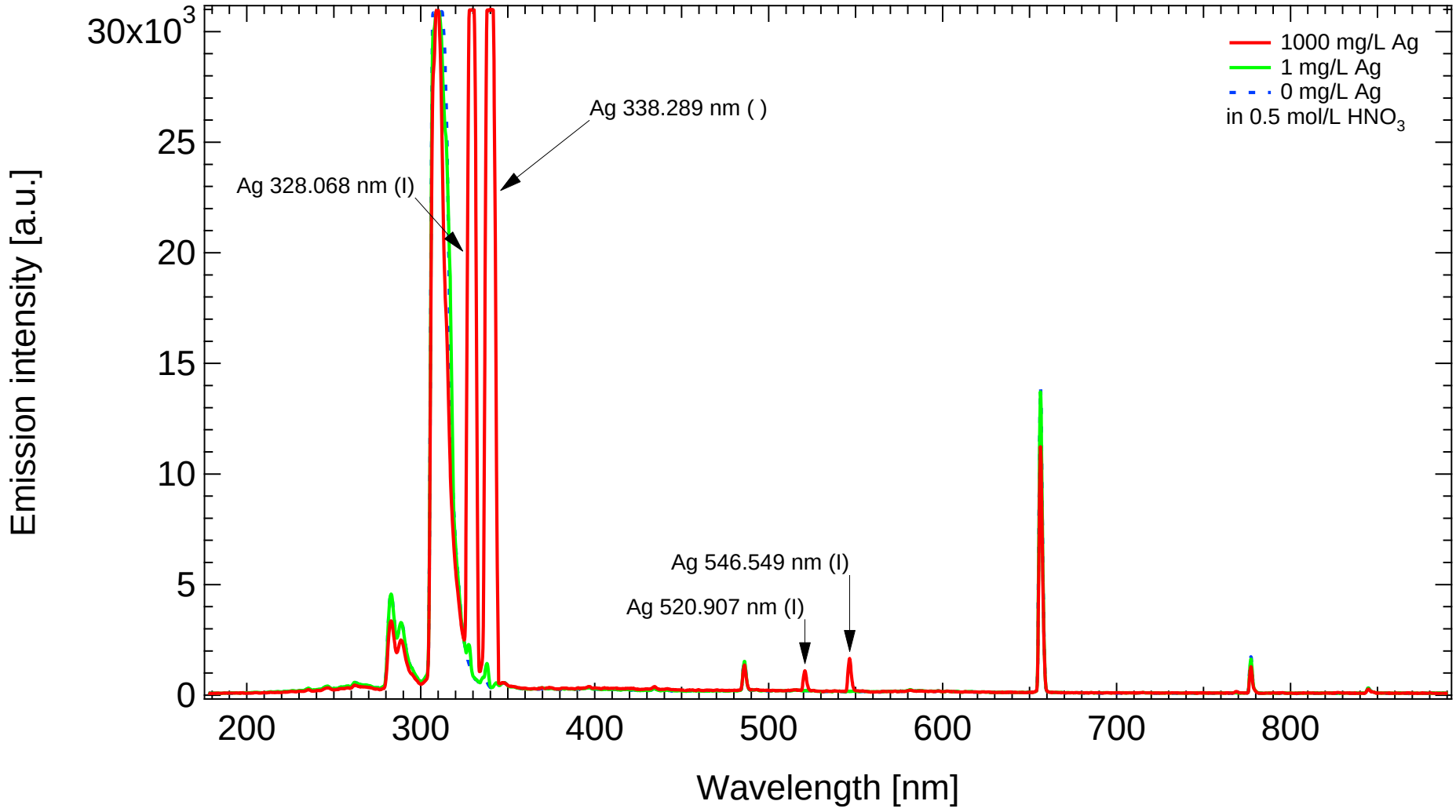
MH-5000 s2086 Conditions: 600 V, (ON: 1 ms / OFF: 100 ms) × 30 pulses ... 18 mol/L
LepiCuve-C 600 V, (ON: 1 ms / OFF: 100 ms) × 40 pulses ... 4 mol/L
750 V, (ON: 2 ms / OFF: 40 ms) × 20 pulses ... 0.1 mol/L



Ag

MH-5000 s2086 Conditions: 650 V, (ON: 2 ms / OFF: 50 ms) × 10 pulses

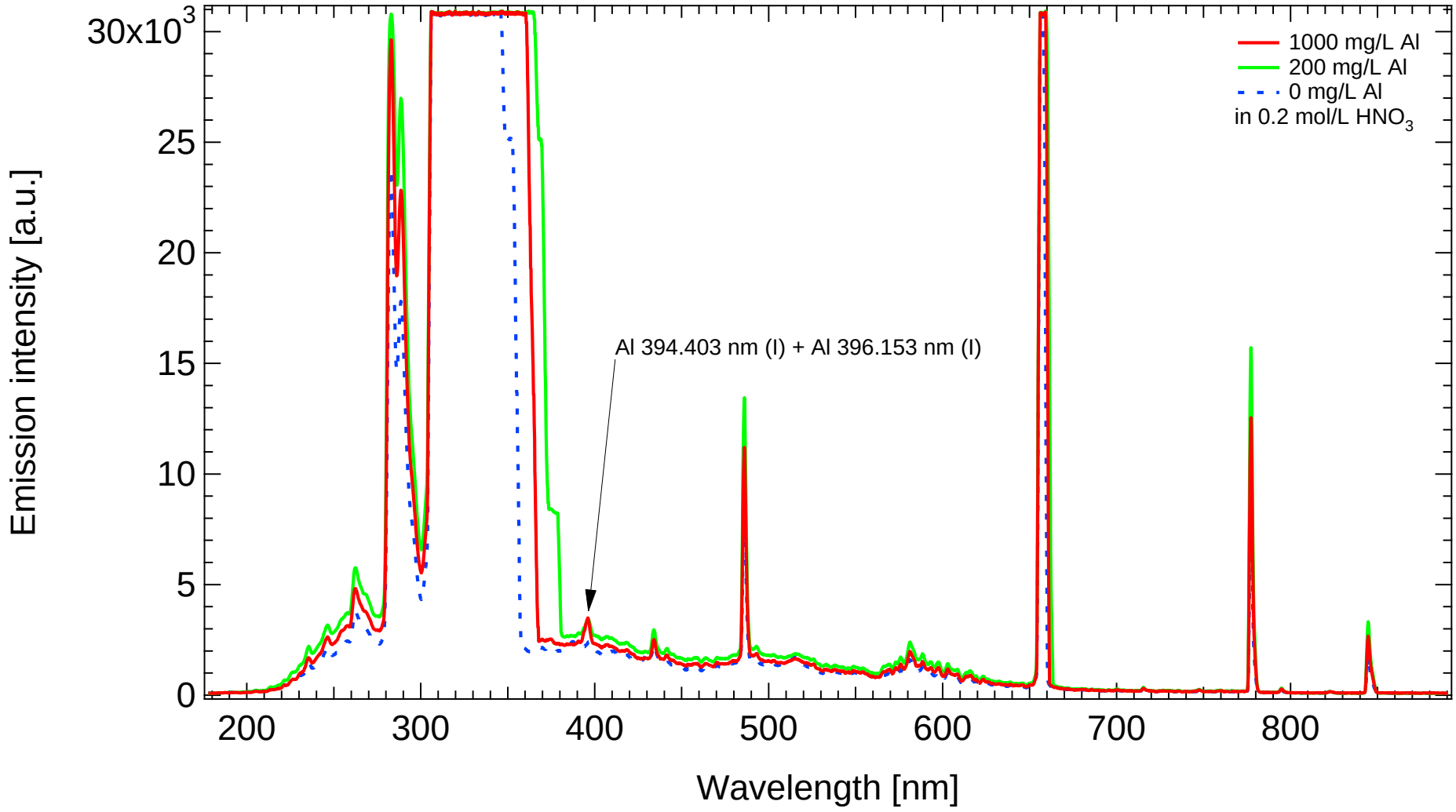
LepiCuve-C



Al

MH-5000 s2086 Conditions: 750 V, (ON: 2 ms / OFF: 40 ms) × 30 pulses

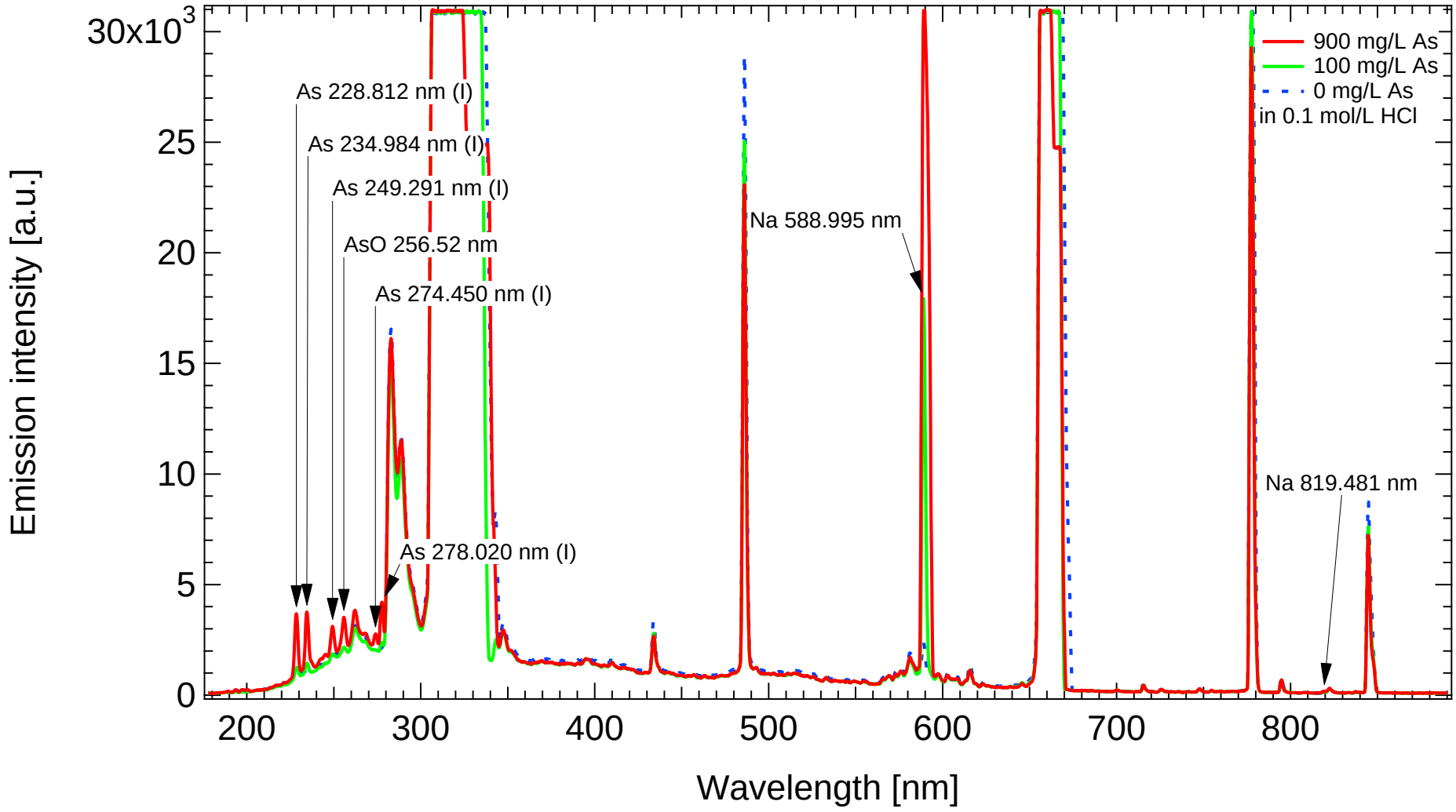
LepiCuve-C



As

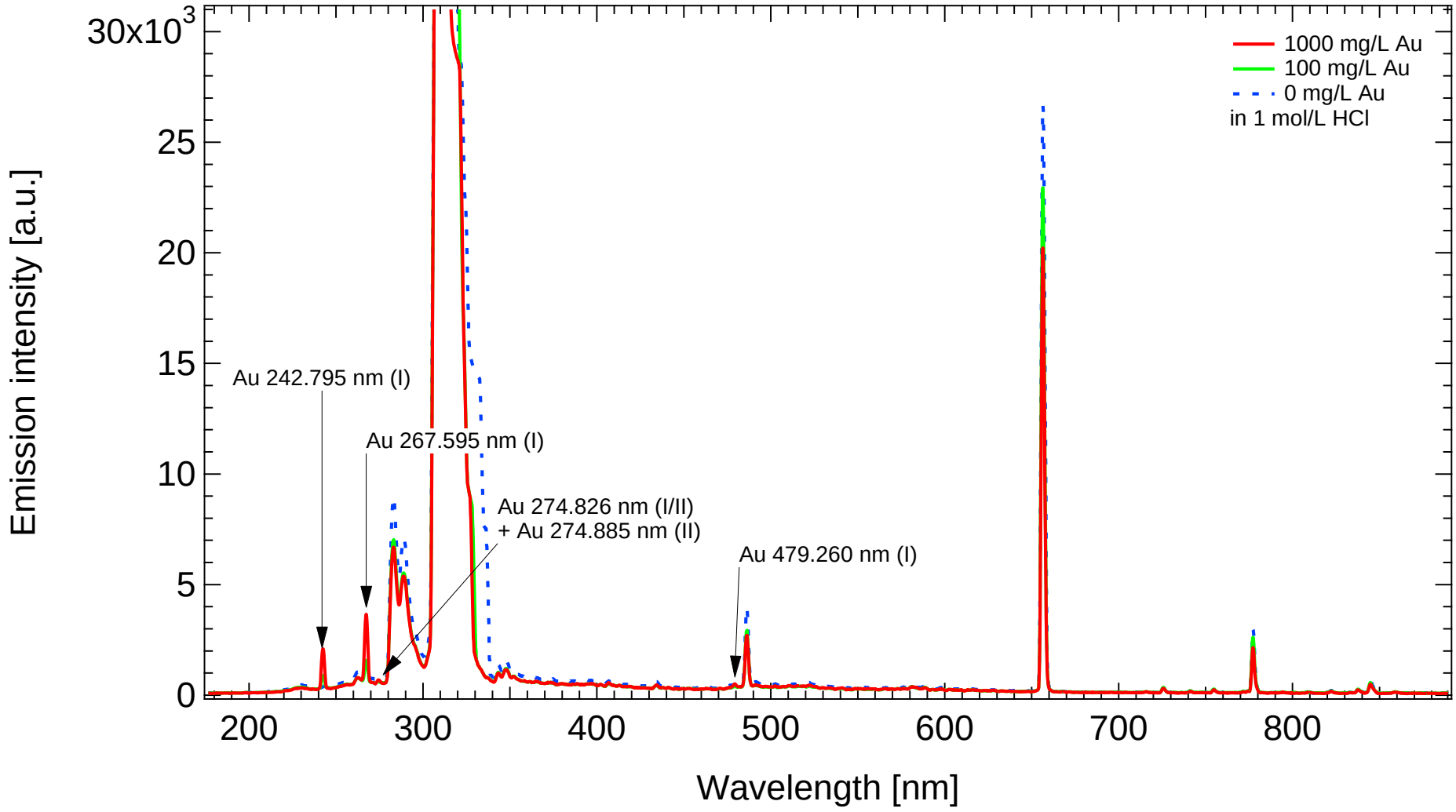
MH-5000 s2086 Conditions: 750 V, (ON: 2 ms / OFF: 40 ms) × 20 pulses

LepiCuve-C



Au

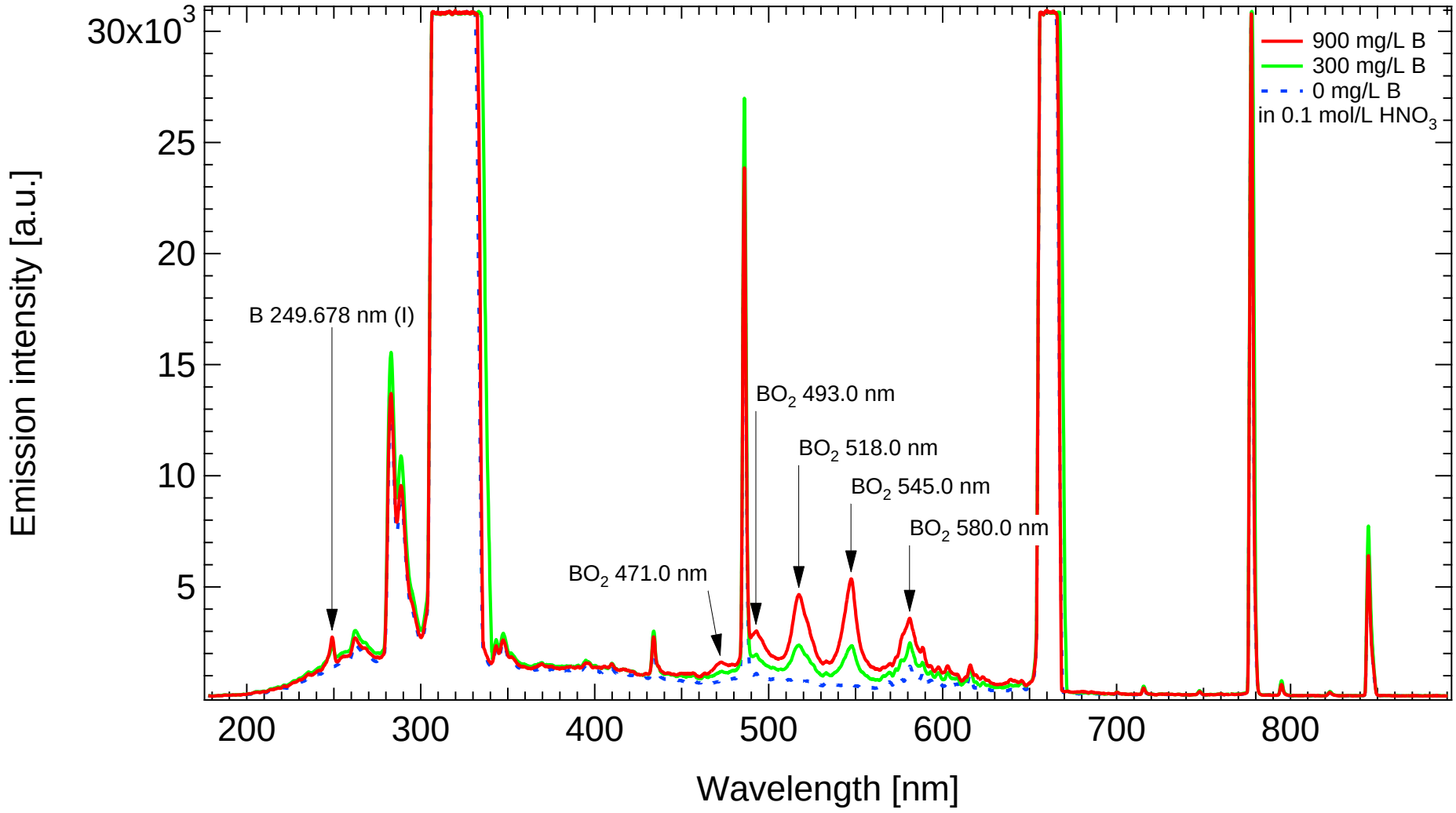
MH-5000 s2086 Conditions: 650 V, (ON: 2 ms / OFF: 60 ms) × 20 pulses
LepiCuve-C



B

MH-5000 s2086 Conditions: 750 V, (ON: 2 ms / OFF: 40 ms) × 20 pulses

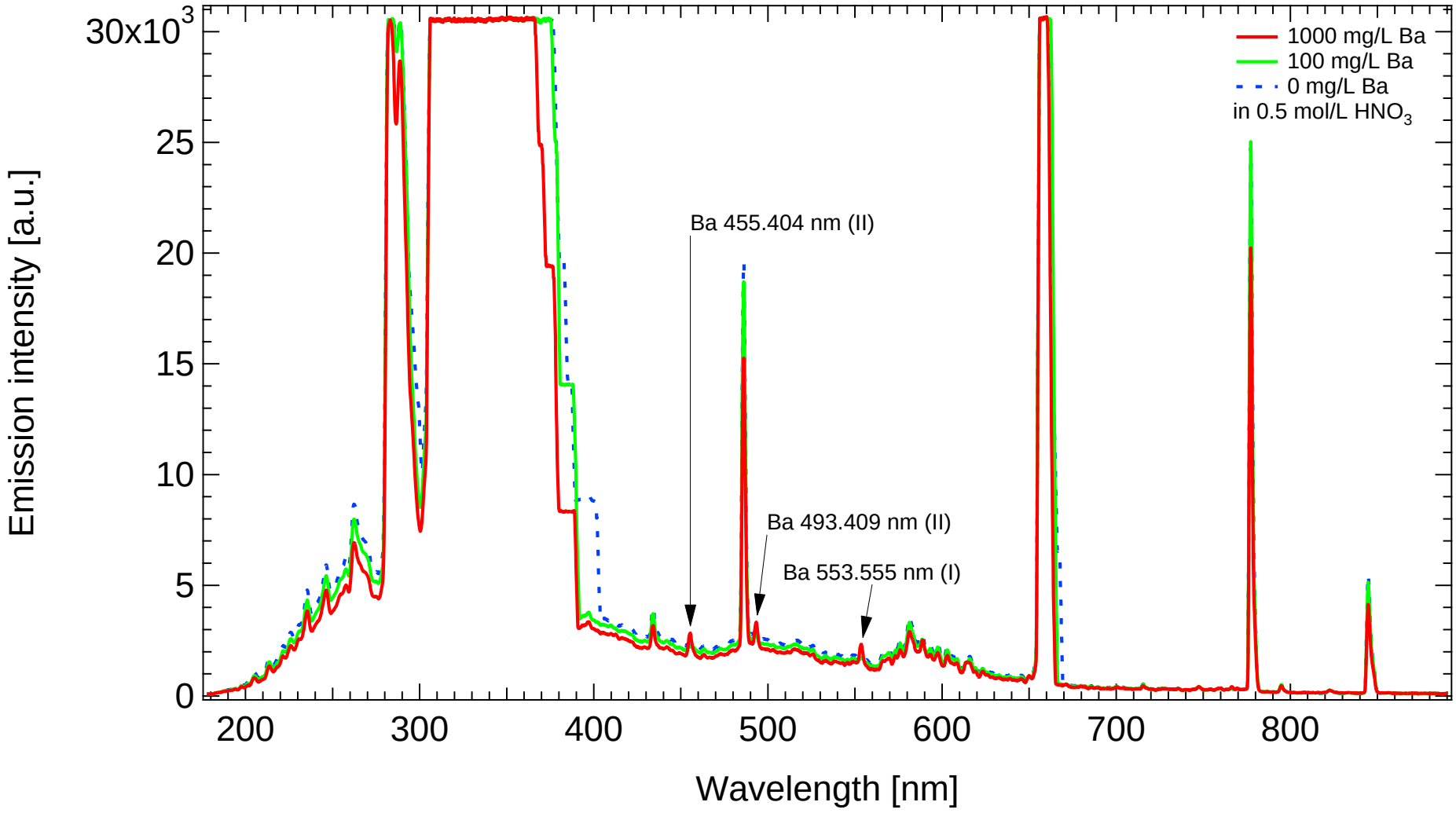
LepiCuve-C



Ba

MH-5000 s2086 Conditions: 750 V, (ON: 2 ms / OFF: 40 ms) × 40 pulses

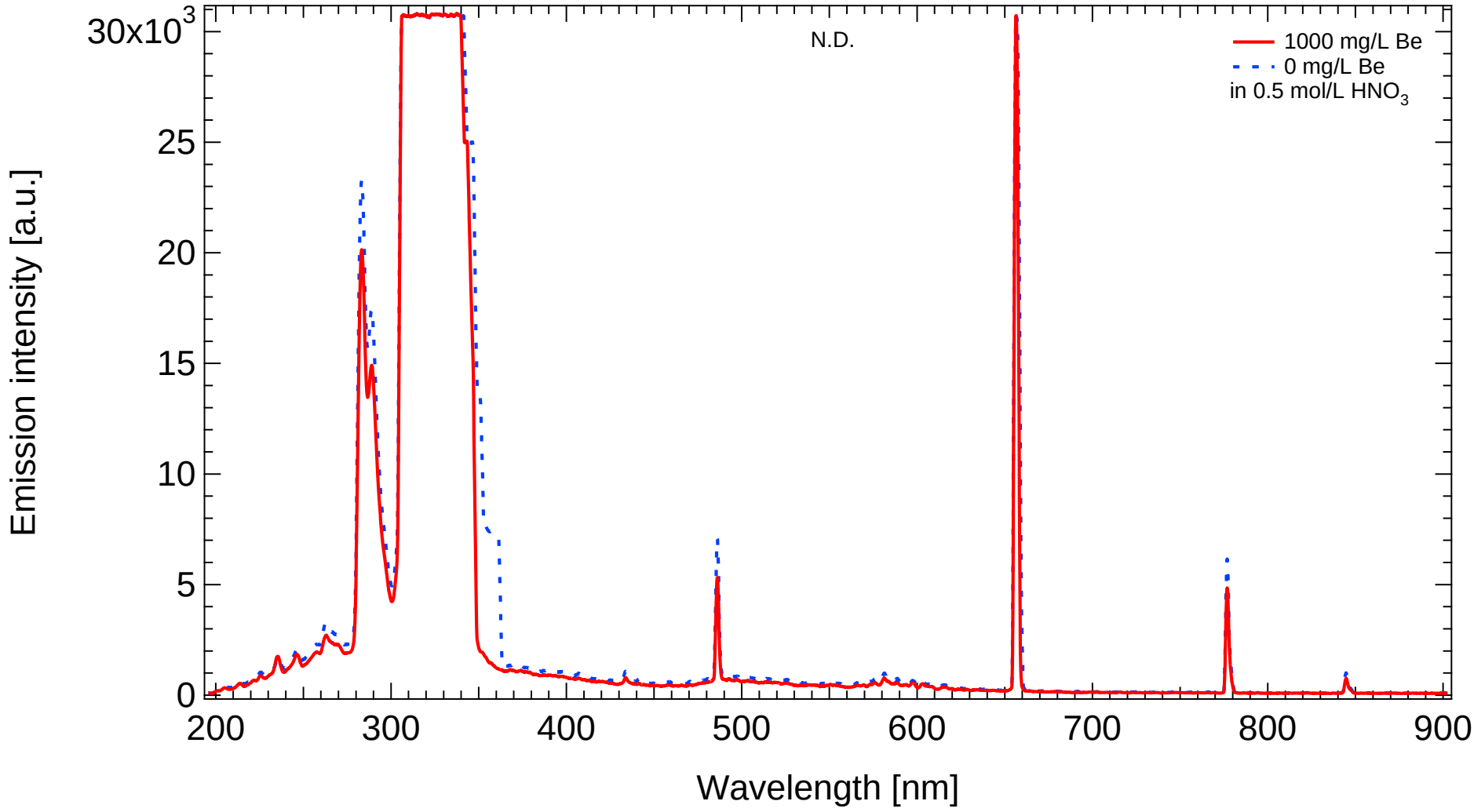
LepiCuve-C



Be

MH-5000 s2086 Conditions: 700 V, (ON: 2 ms / OFF: 50 ms) × 10 pulses

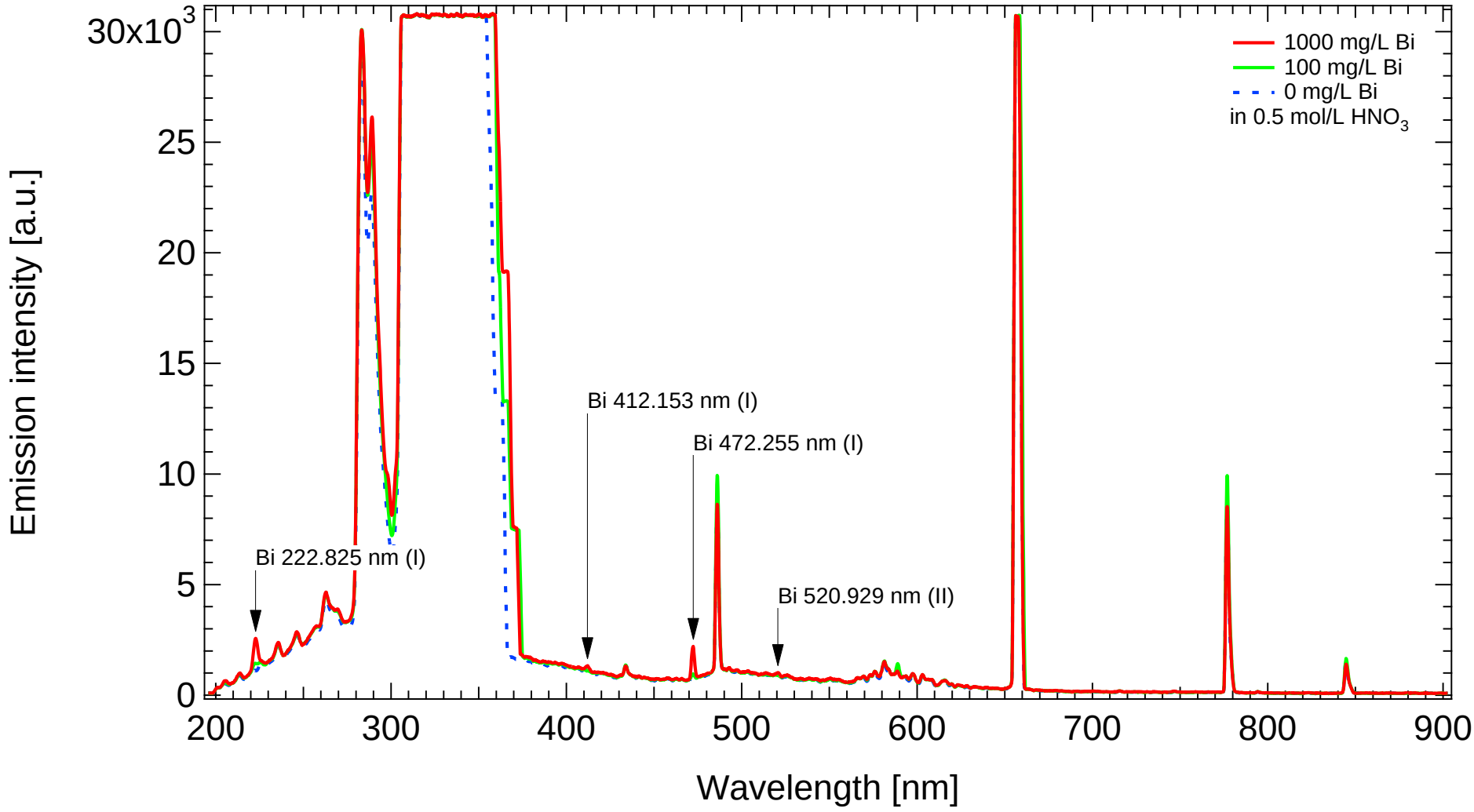
LepiCuve-C



Bi

MH-5000 s2086 Conditions: 750 V, (ON: 2 ms / OFF: 50 ms) × 10 pulses

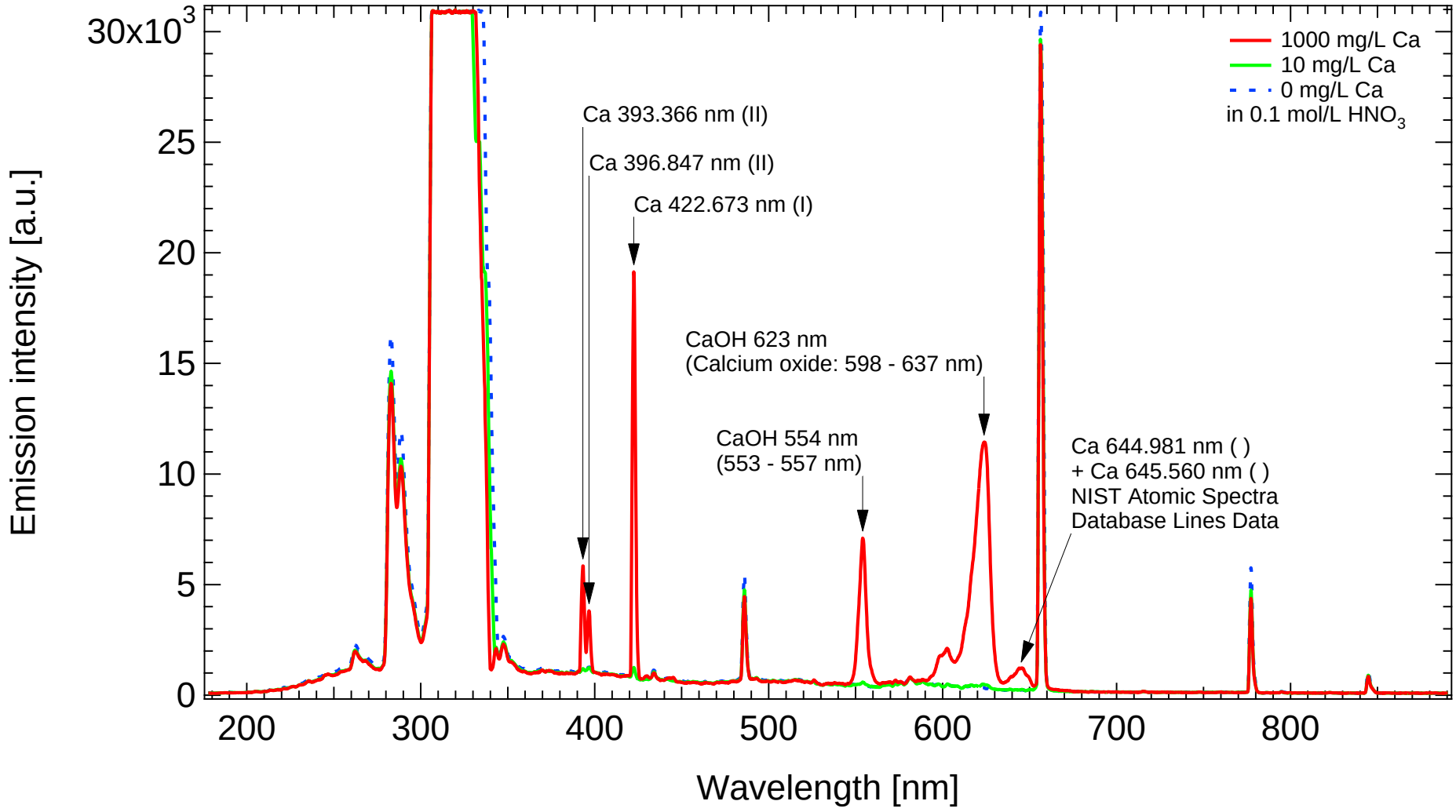
LepiCuve-C



Ca

MH-5000 s2086 Conditions: 750 V, (ON: 2 ms / OFF: 40 ms) × 20 pulses

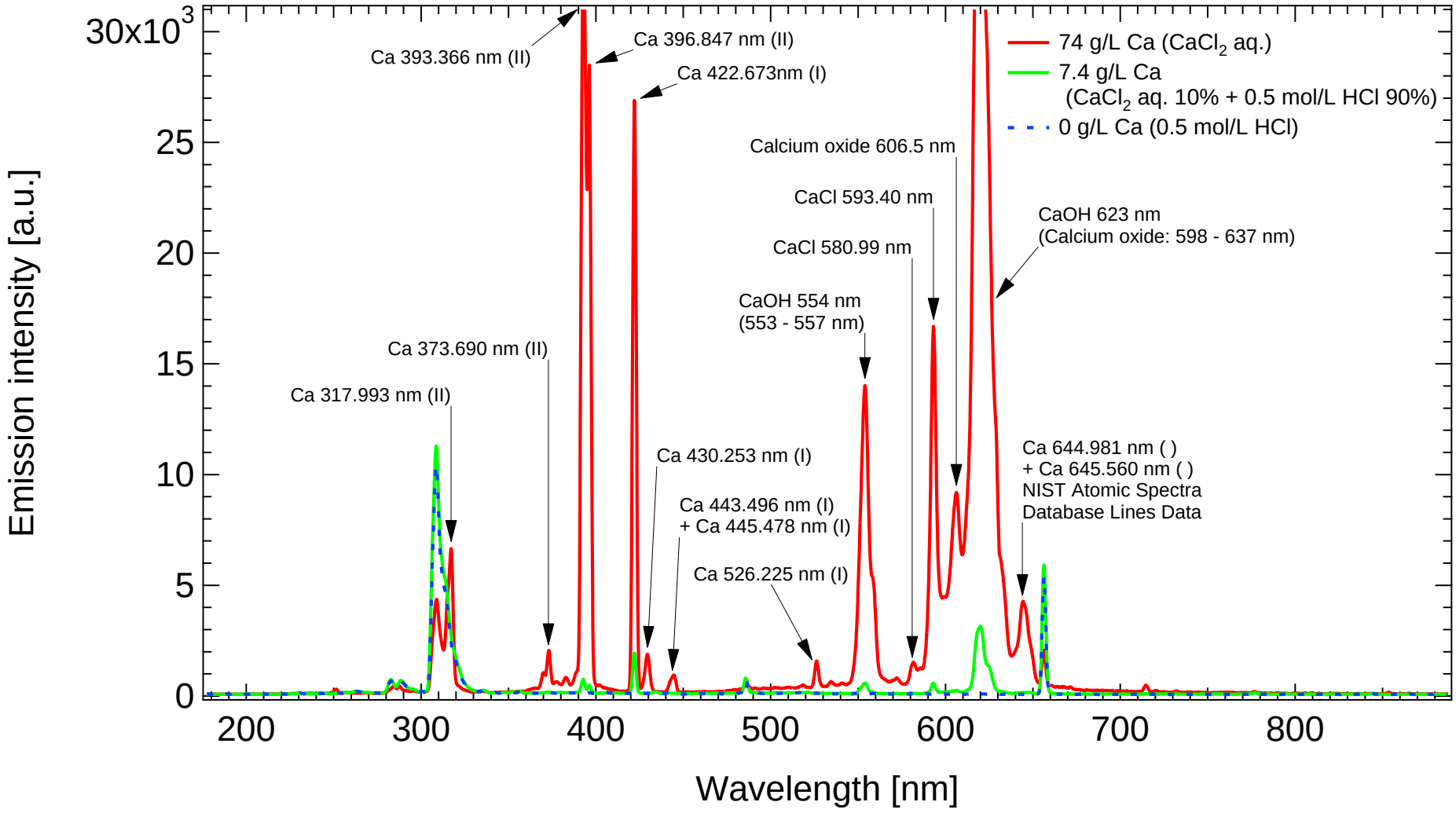
LepiCuve-C



Ca

MH-5000 s2086 Conditions: 500 V, (ON: 2 ms / OFF: 50 ms) × 20 pulses

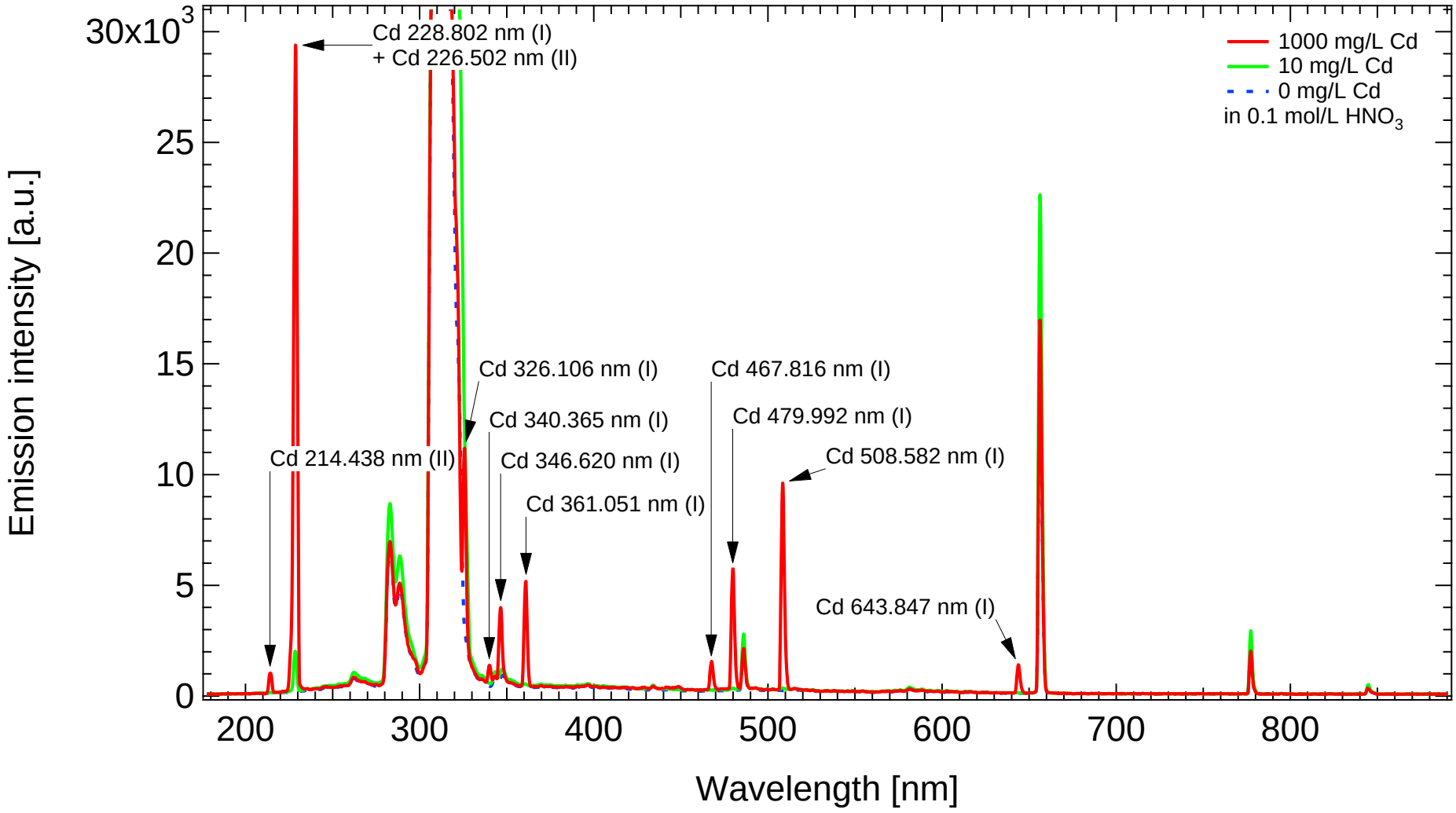
LepiCuve-C



Cd

MH-5000 s2086 Conditions: 750 V, (ON: 2 ms / OFF: 40 ms) × 10 pulses

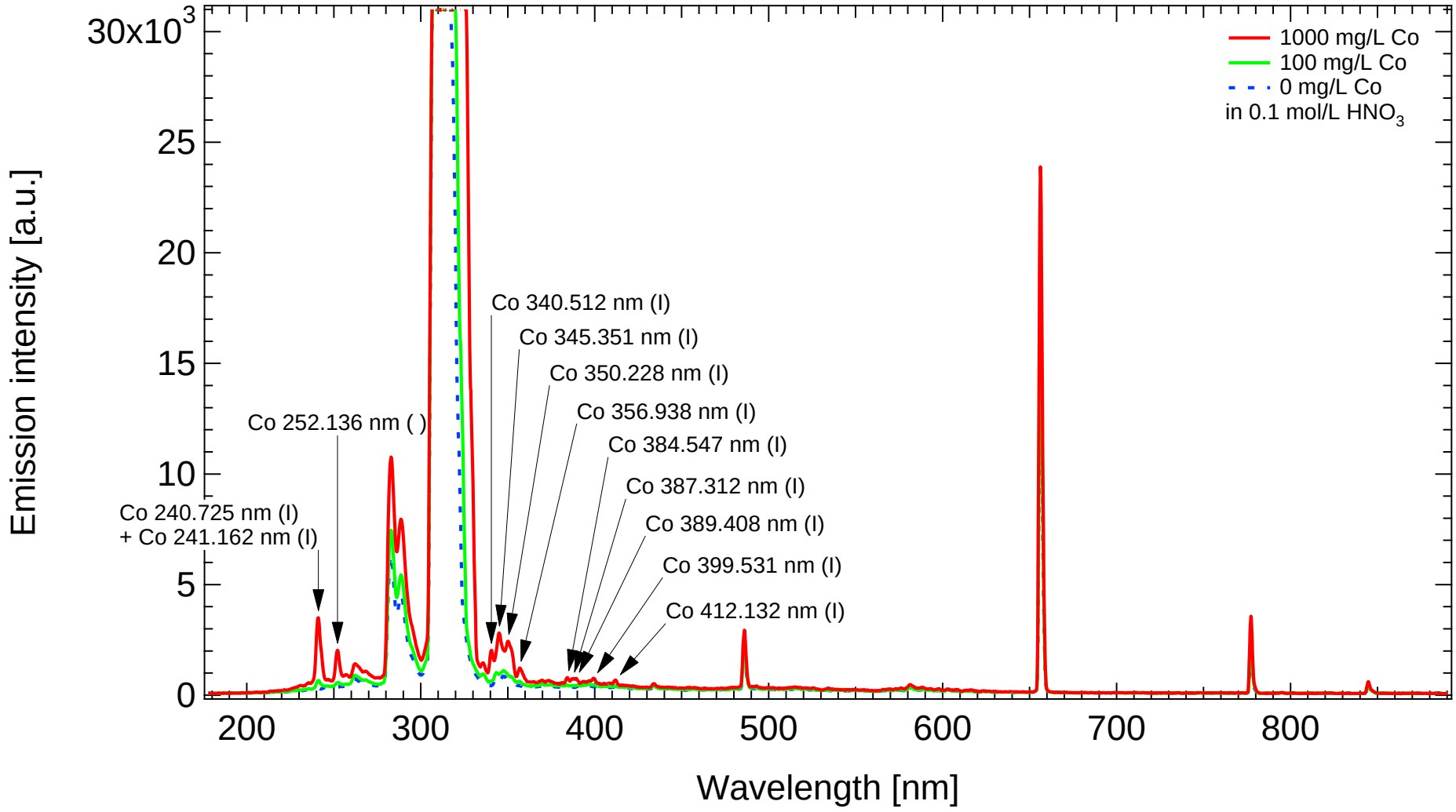
LepiCuve-C



Co

MH-5000 s2086 Conditions: 750 V, (ON: 2 ms / OFF: 40 ms) × 10 pulses

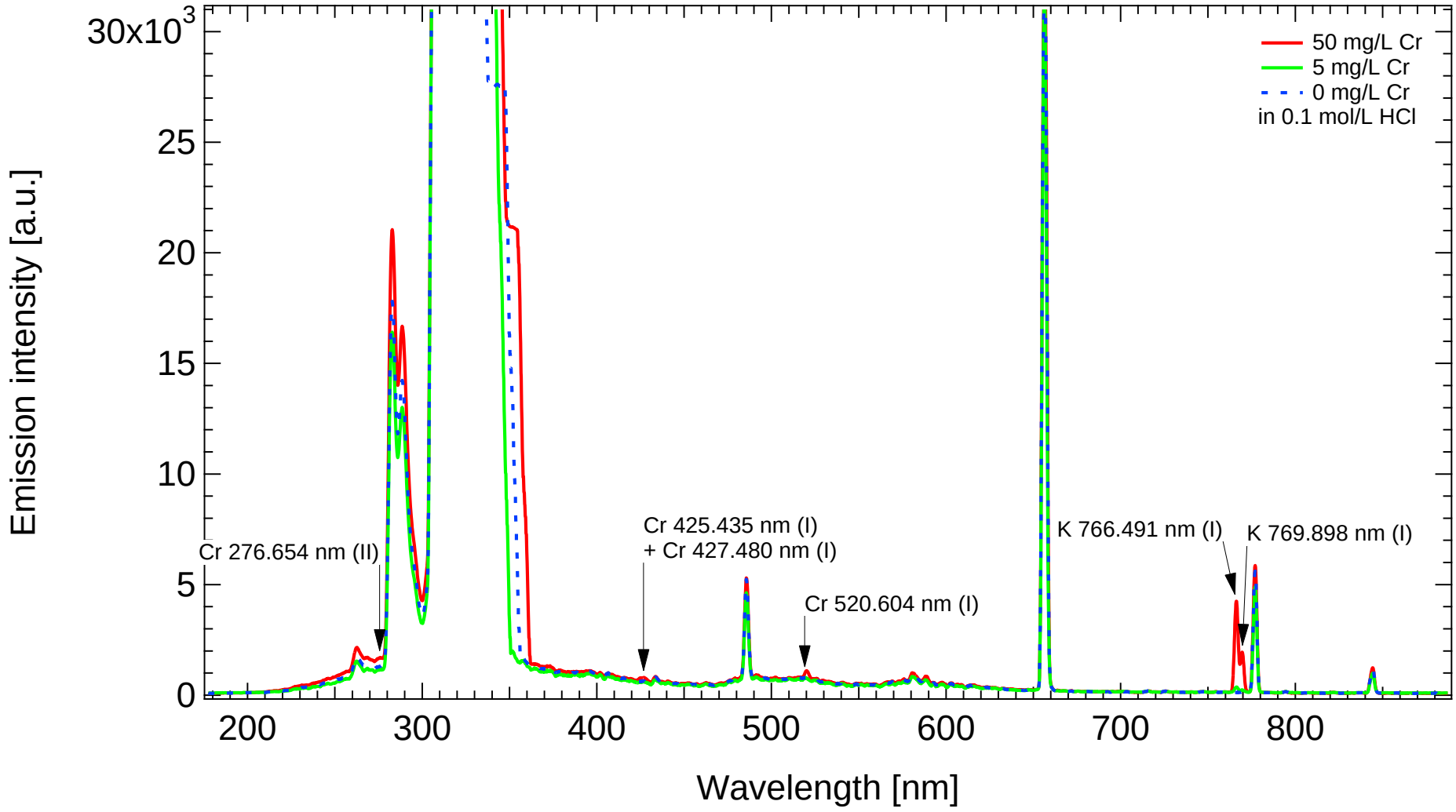
LepiCuve-C



Cr

MH-5000 s2086 Conditions: 800 V, (ON: 2 ms / OFF: 60 ms) × 20 pulses

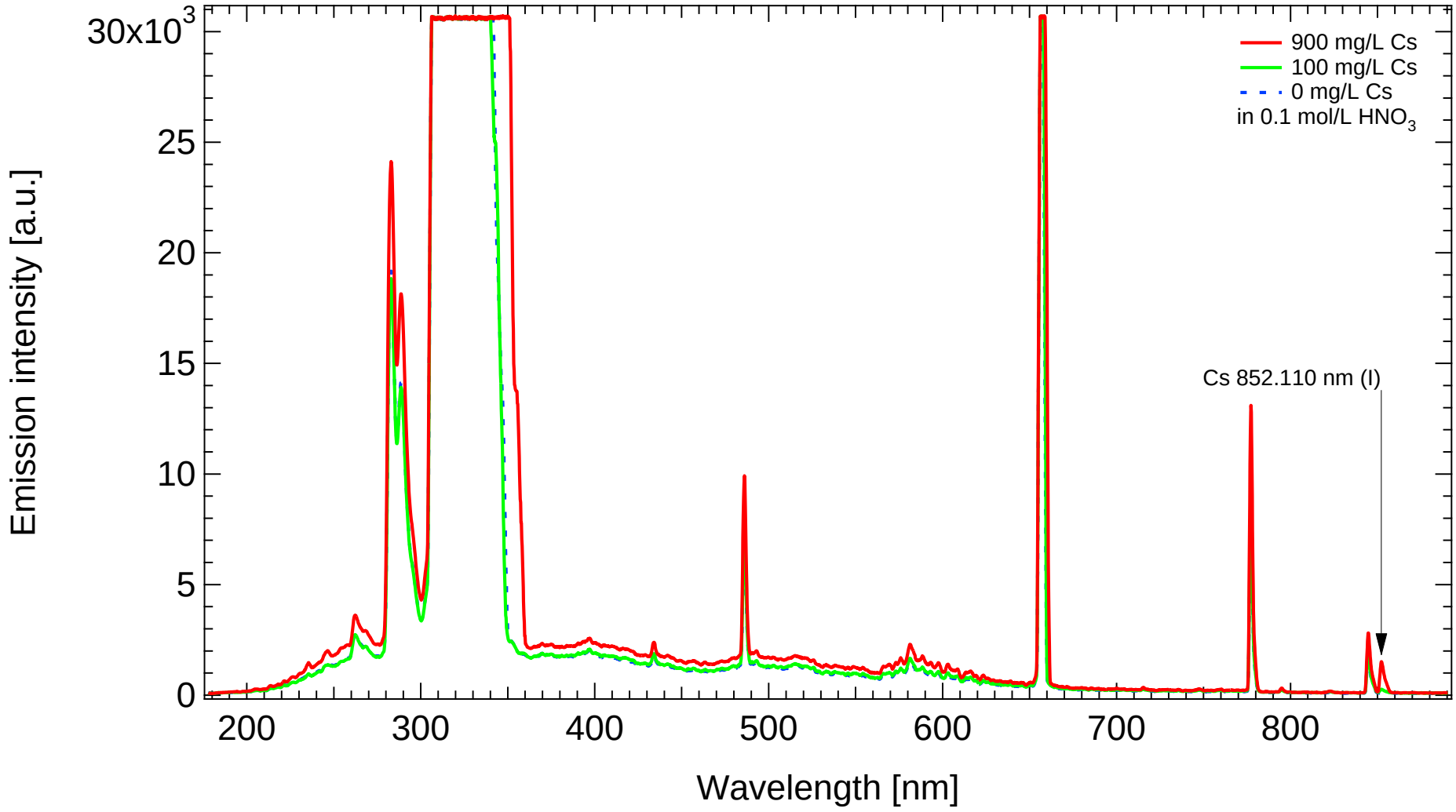
LepiCuve-C



Cs

MH-5000 s2086 Conditions: 750 V, (ON: 2 ms / OFF: 40 ms) × 40 pulses

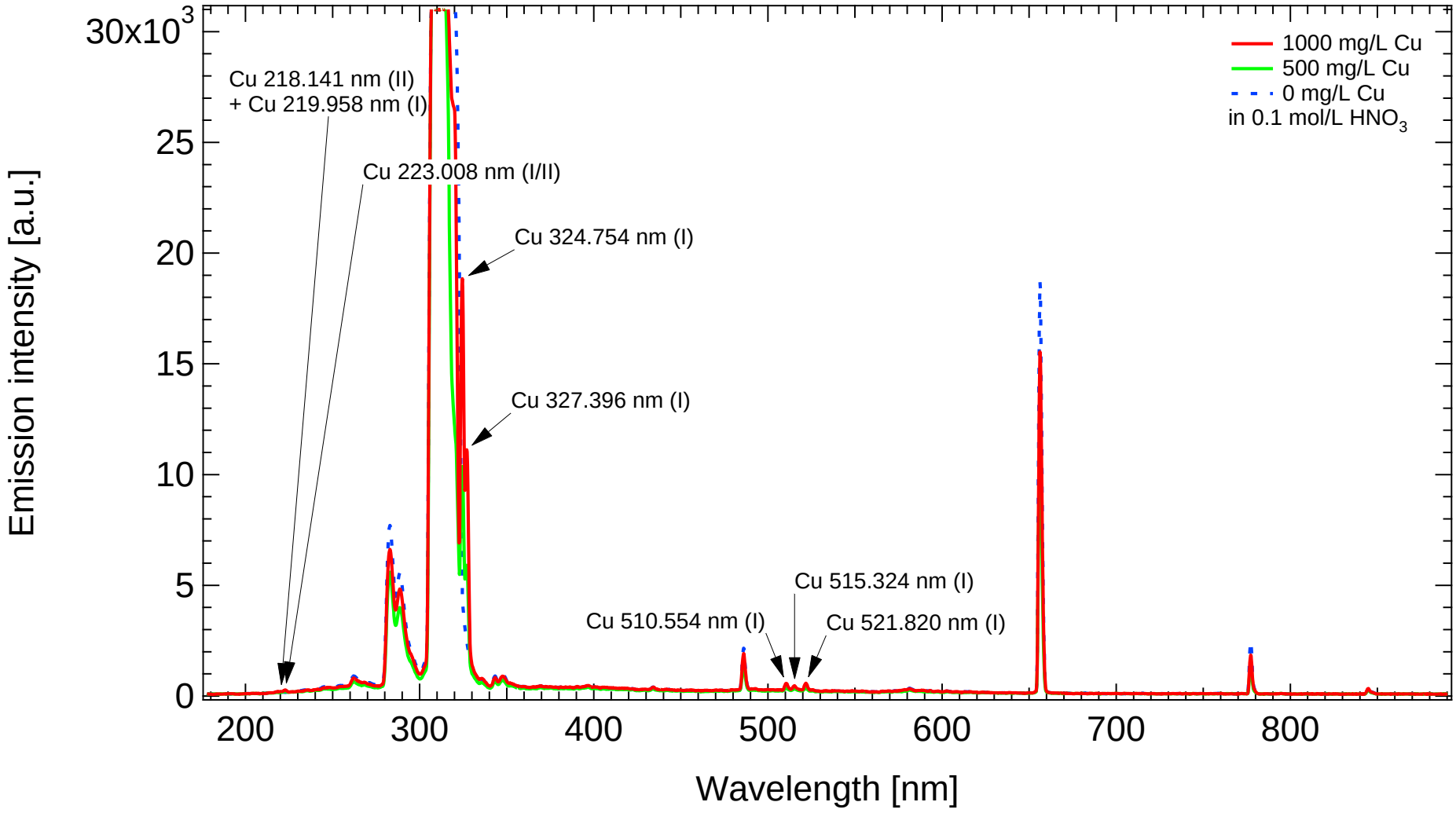
LepiCuve-C



Cu

MH-5000 s2086 Conditions: 750 V, (ON: 2 ms / OFF: 40 ms) × 10 pulses

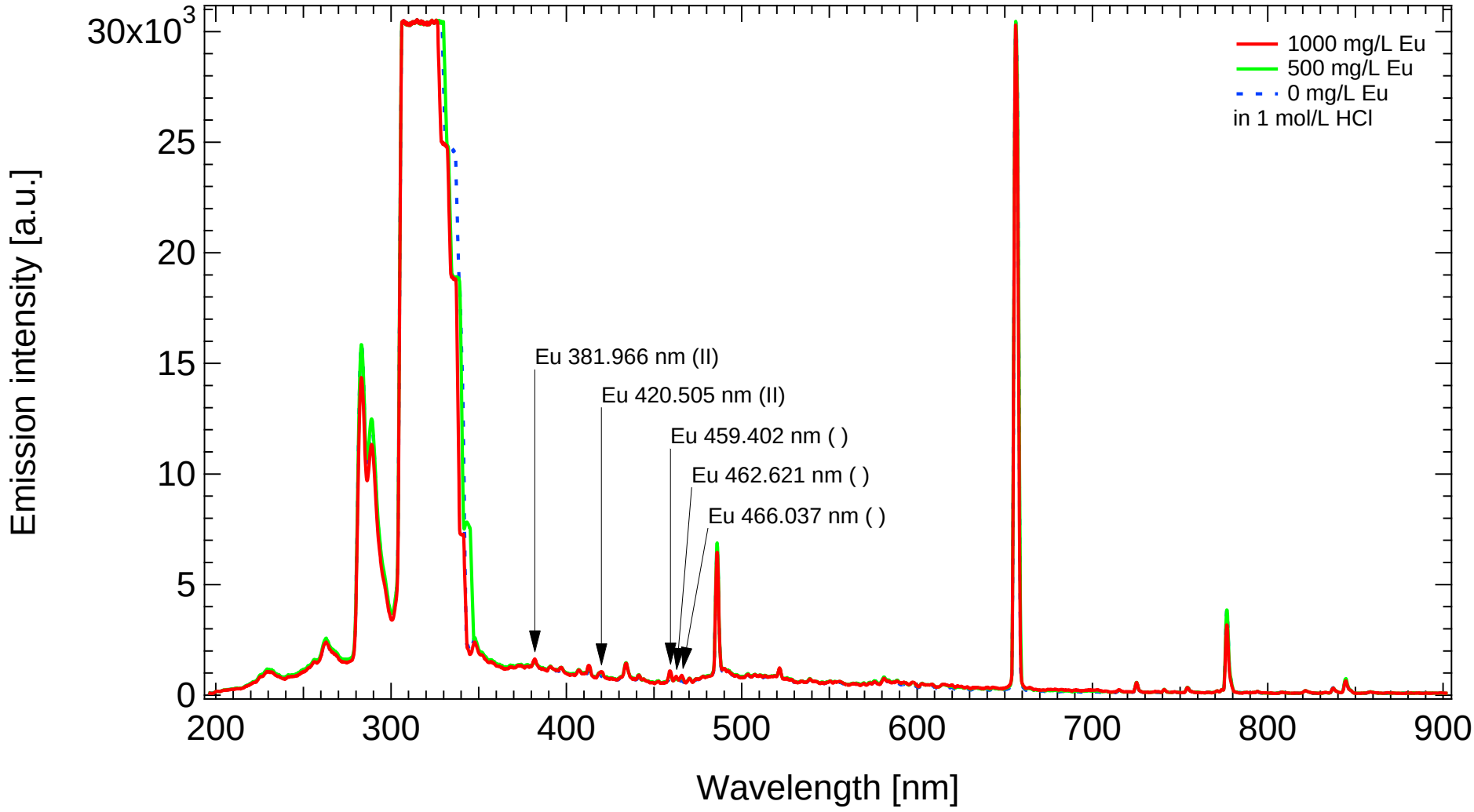
LepiCuve-C



Eu

MH-5000 s2086 Conditions: 650 V, (ON: 2 ms / OFF: 60 ms) × 20 pulses

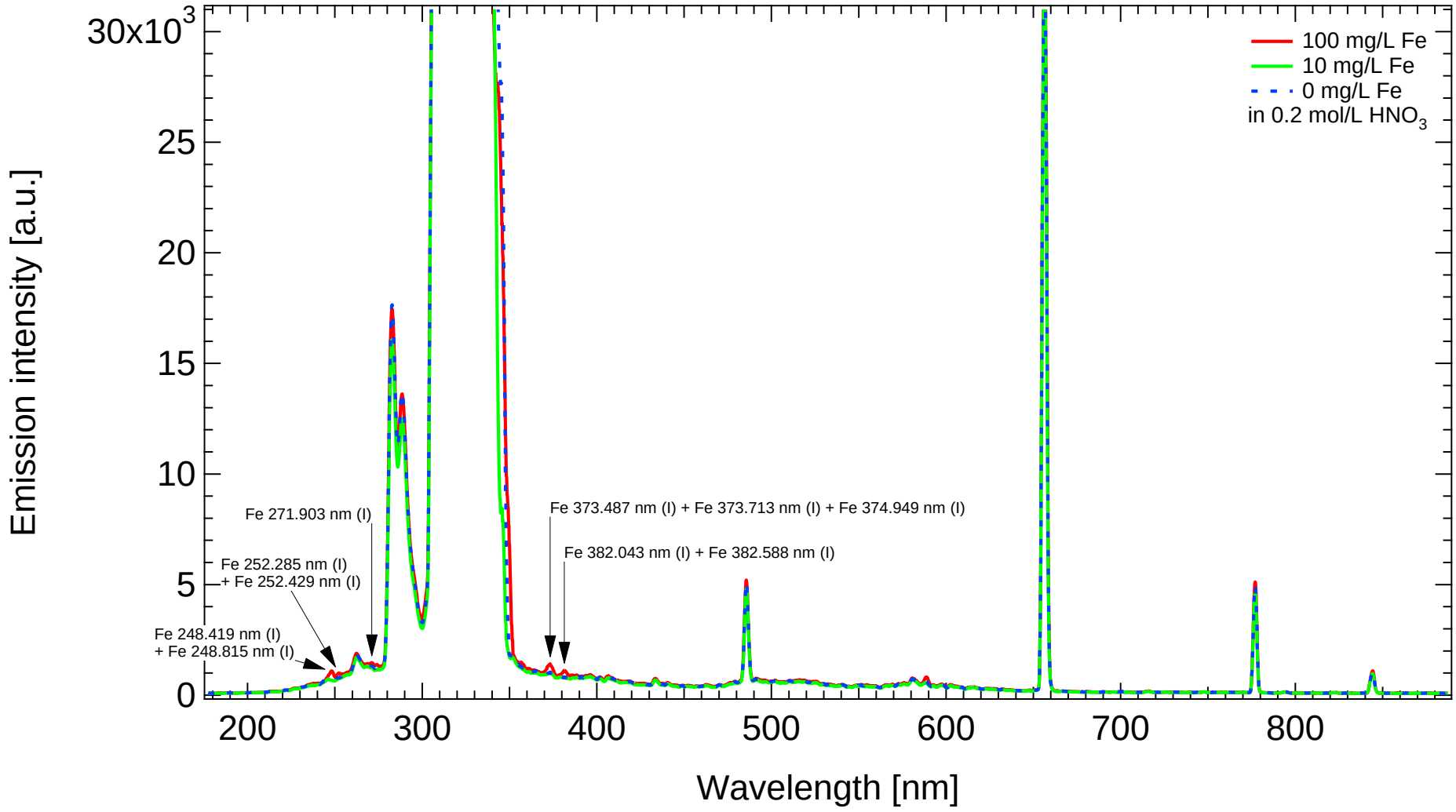
LepiCuve-C



Fe

MH-5000 s2086 Conditions: 750 V, (ON: 2 ms / OFF: 80 ms) × 20 pulses

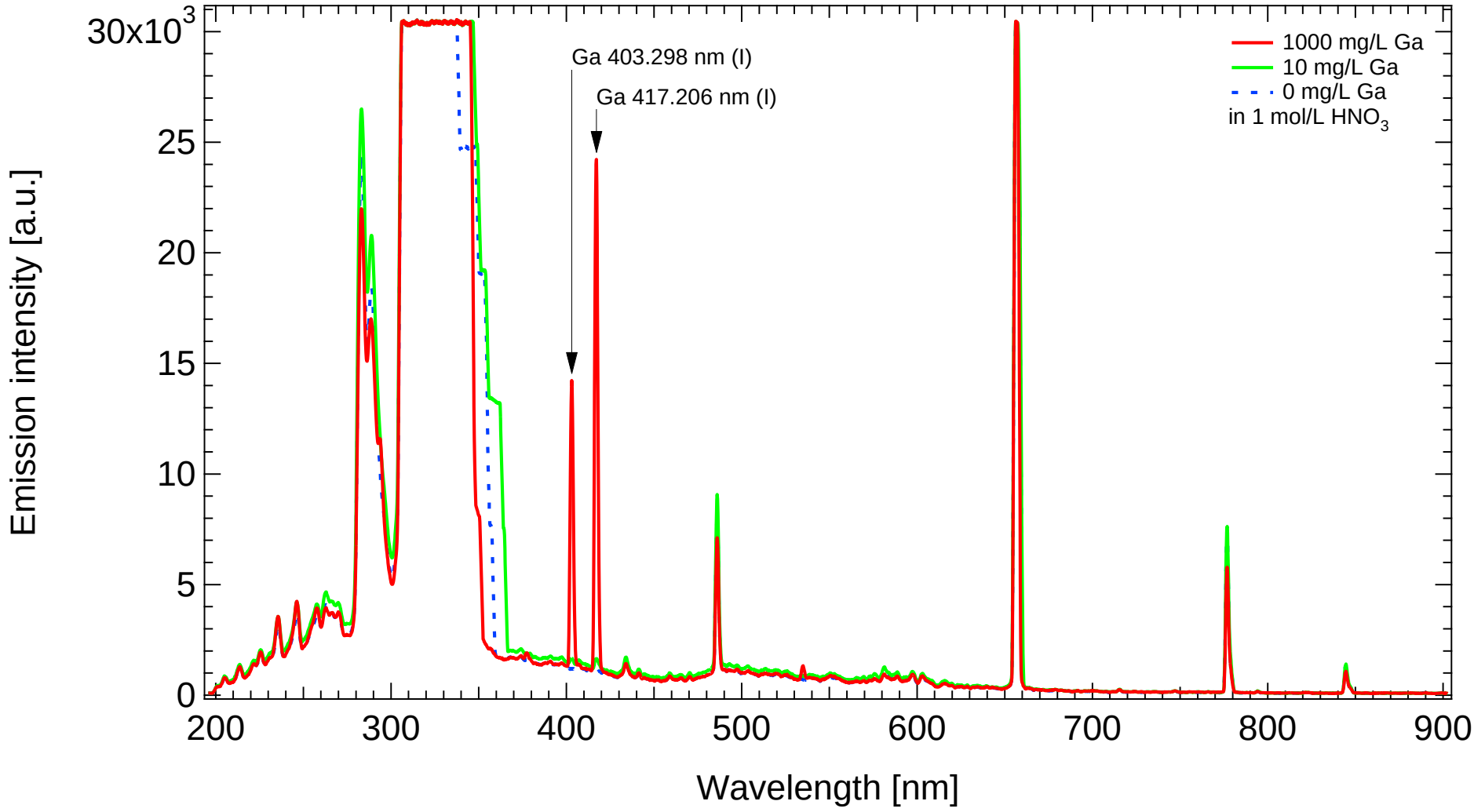
LepiCuve-C



Ga

MH-5000 s2086 Conditions: 650 V, (ON: 2 ms / OFF: 60 ms) × 20 pulses

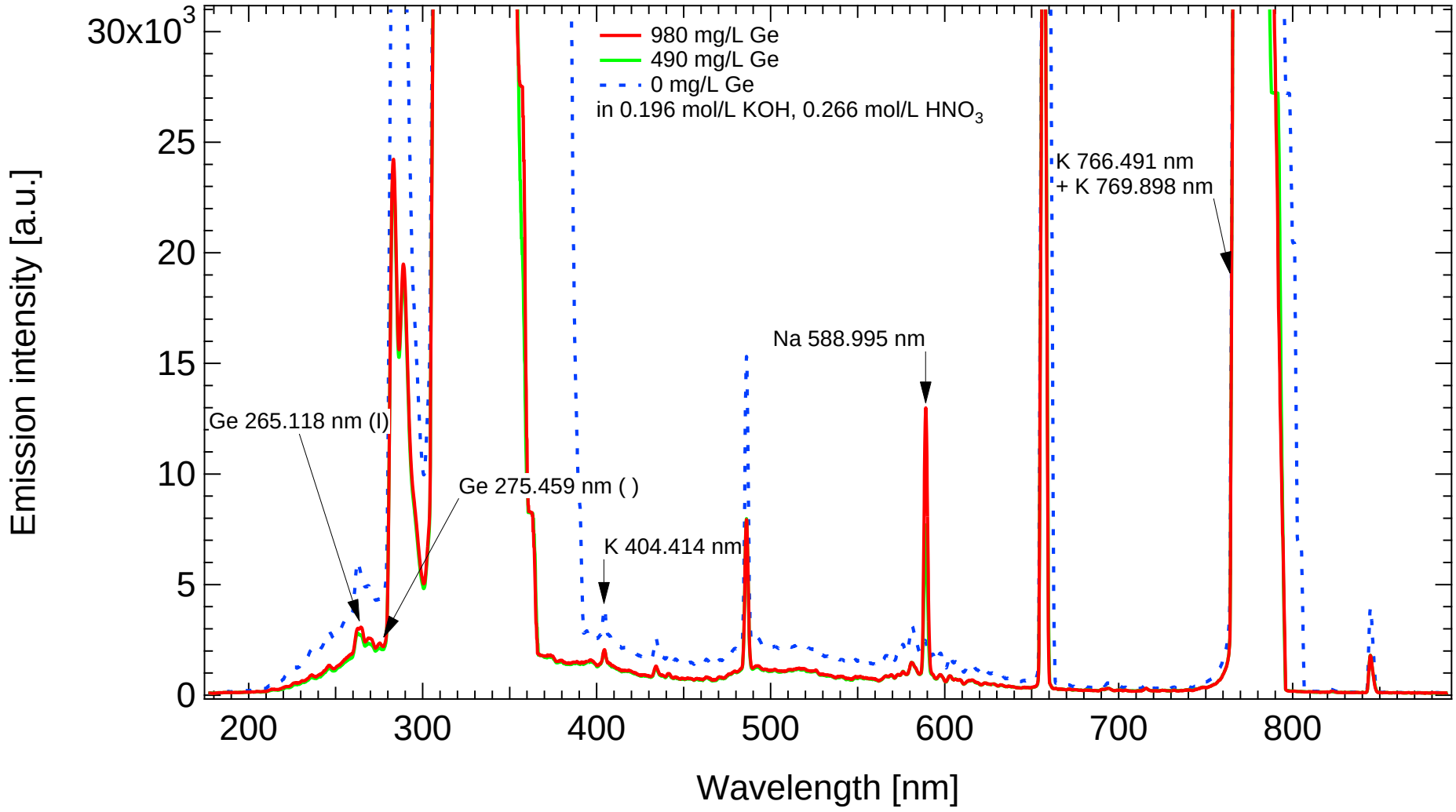
LepiCuve-C



Ge

MH-5000 s2086 Conditions: 750 V, (ON: 2 ms / OFF: 50 ms) × 20 pulses

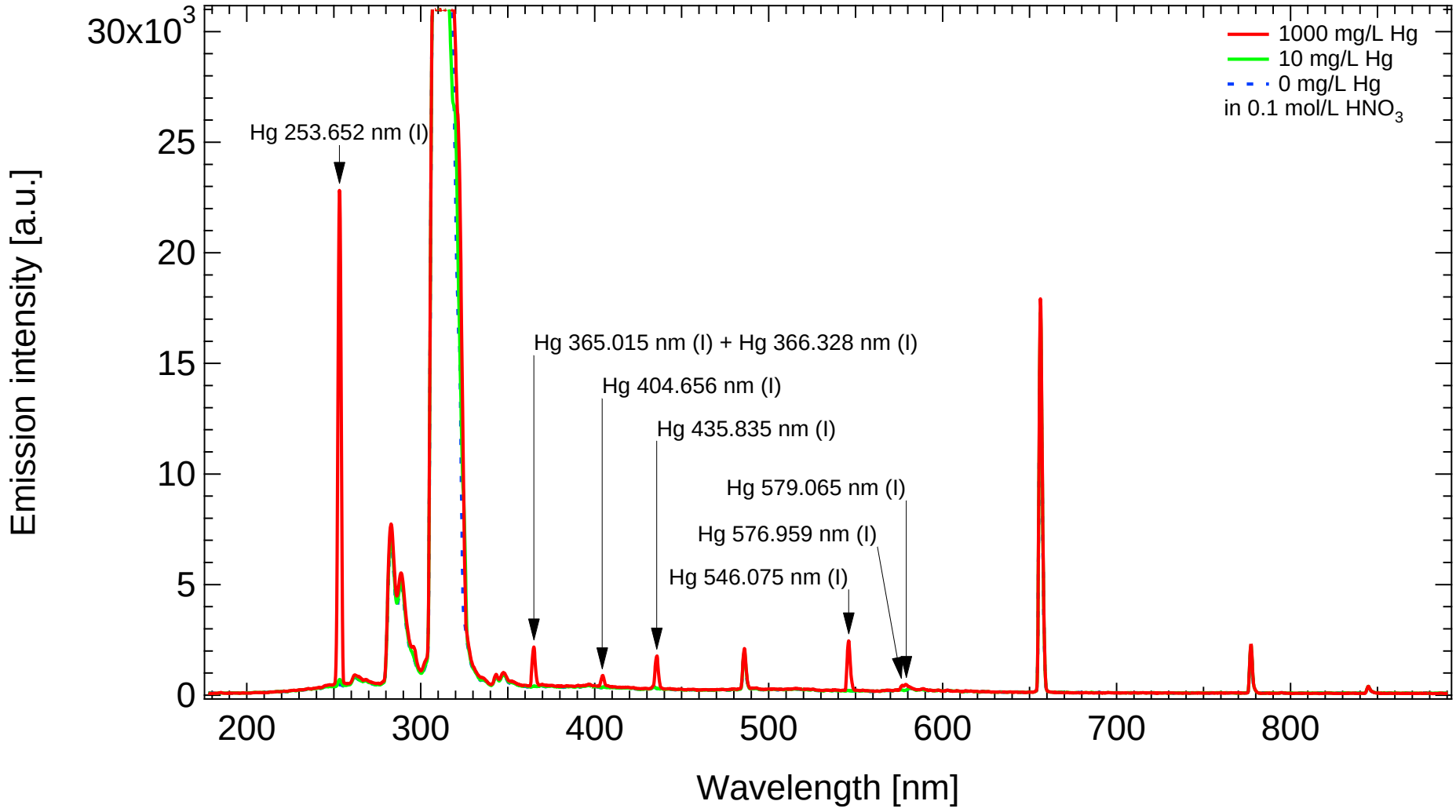
LepiCuve-C



Hg

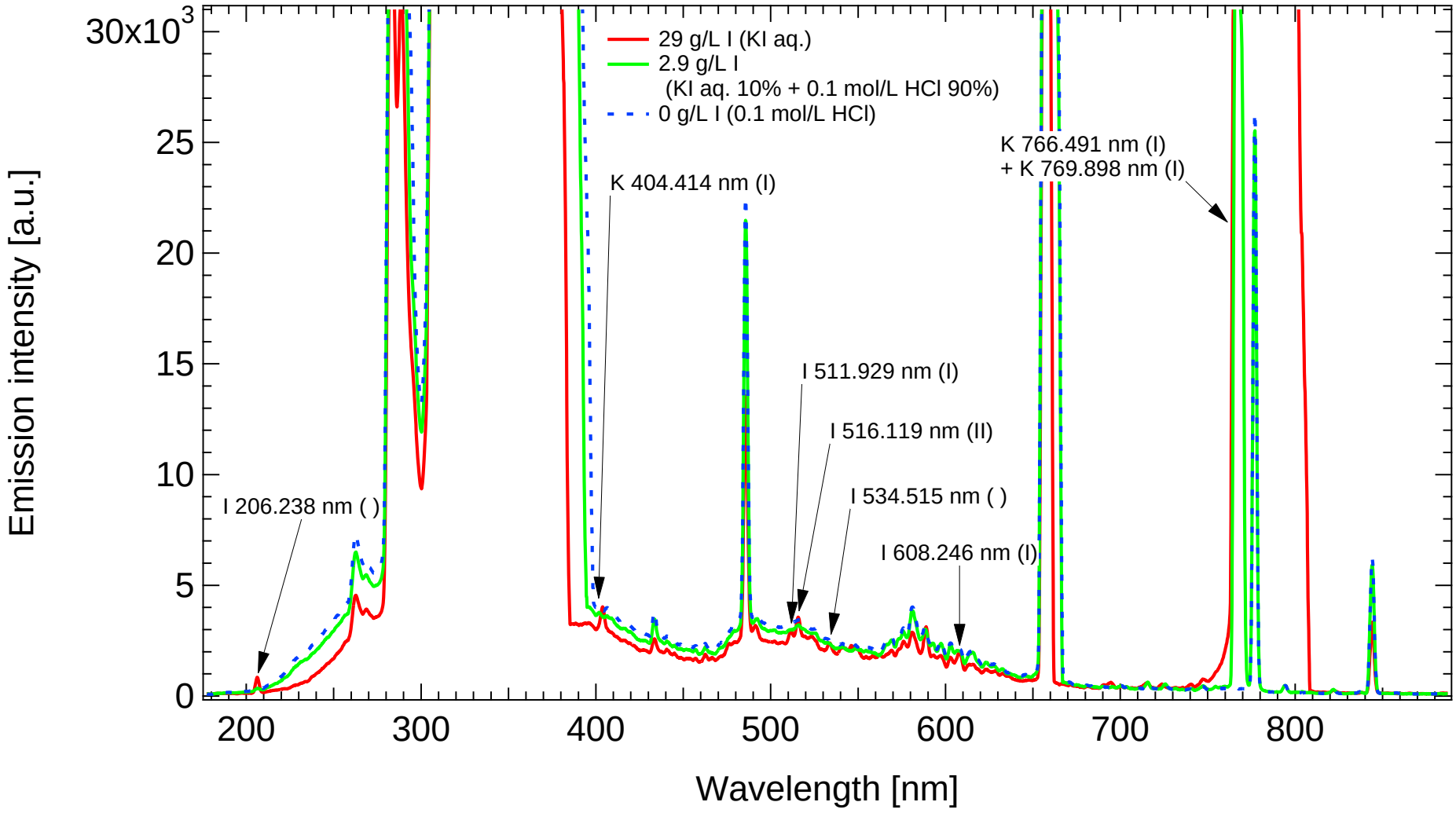
MH-5000 s2086 Conditions: 750 V, (ON: 2 ms / OFF: 40 ms) × 10 pulses

LepiCuve-C



MH-5000 s2086 Conditions: 850 V, (ON: 2 ms / OFF: 40 ms) × 40 pulses

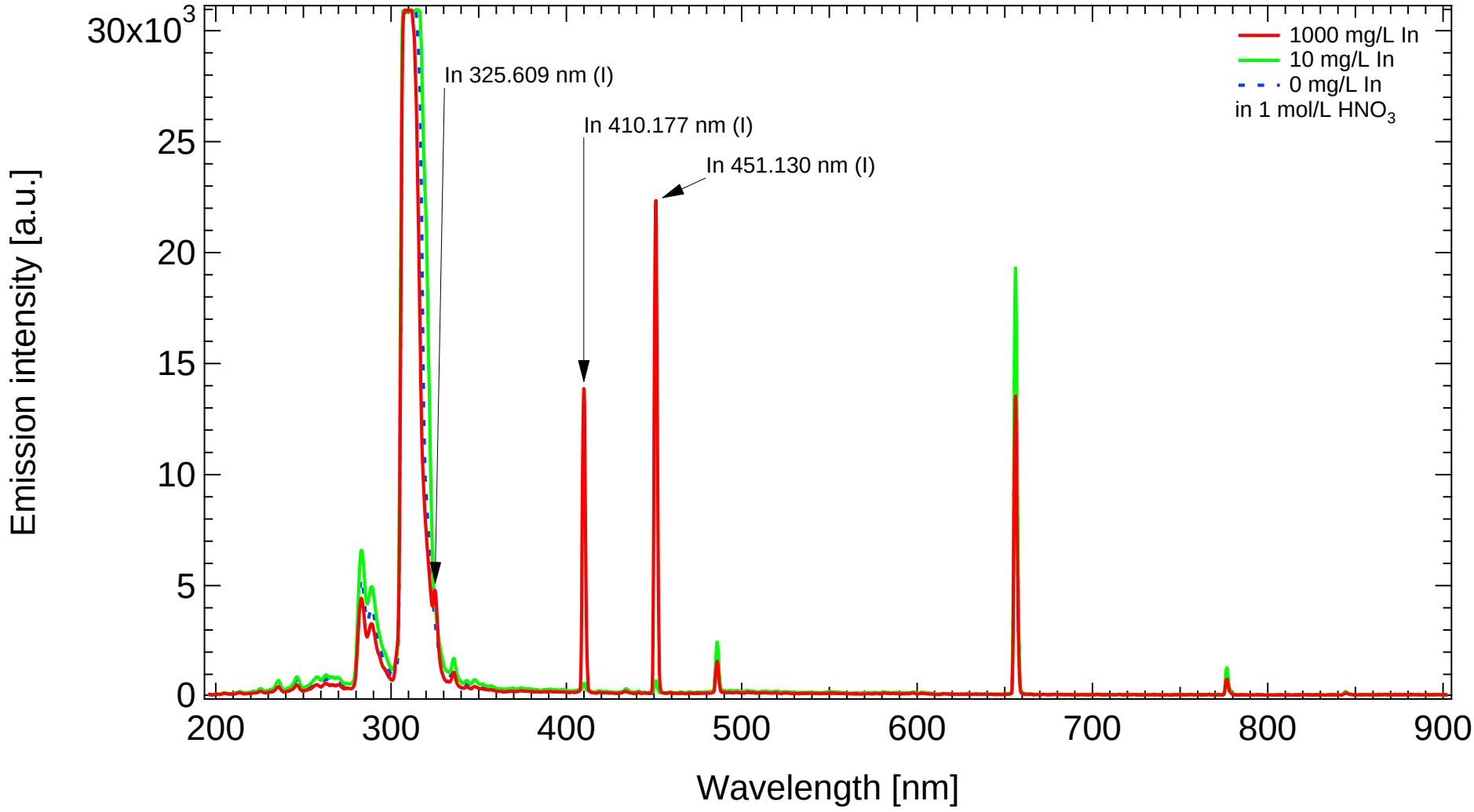
LepiCuve-C



In

MH-5000 s2086 Conditions: 600 V, (ON: 2 ms / OFF: 60 ms) × 10 pulses

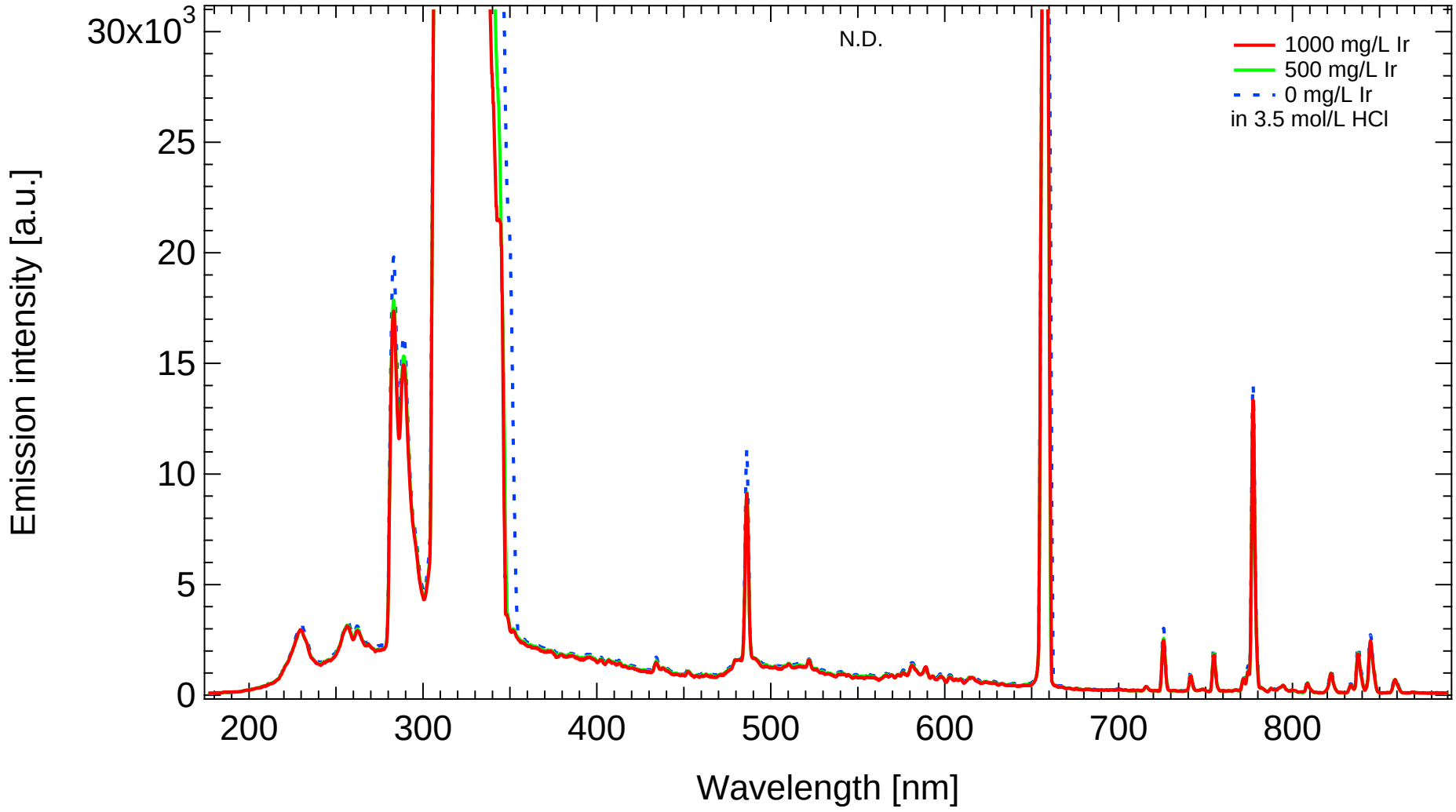
LepiCuve-C



Ir

MH-5000 s2086 Conditions: 650 V, (ON: 2 ms / OFF: 110 ms) × 20 pulses

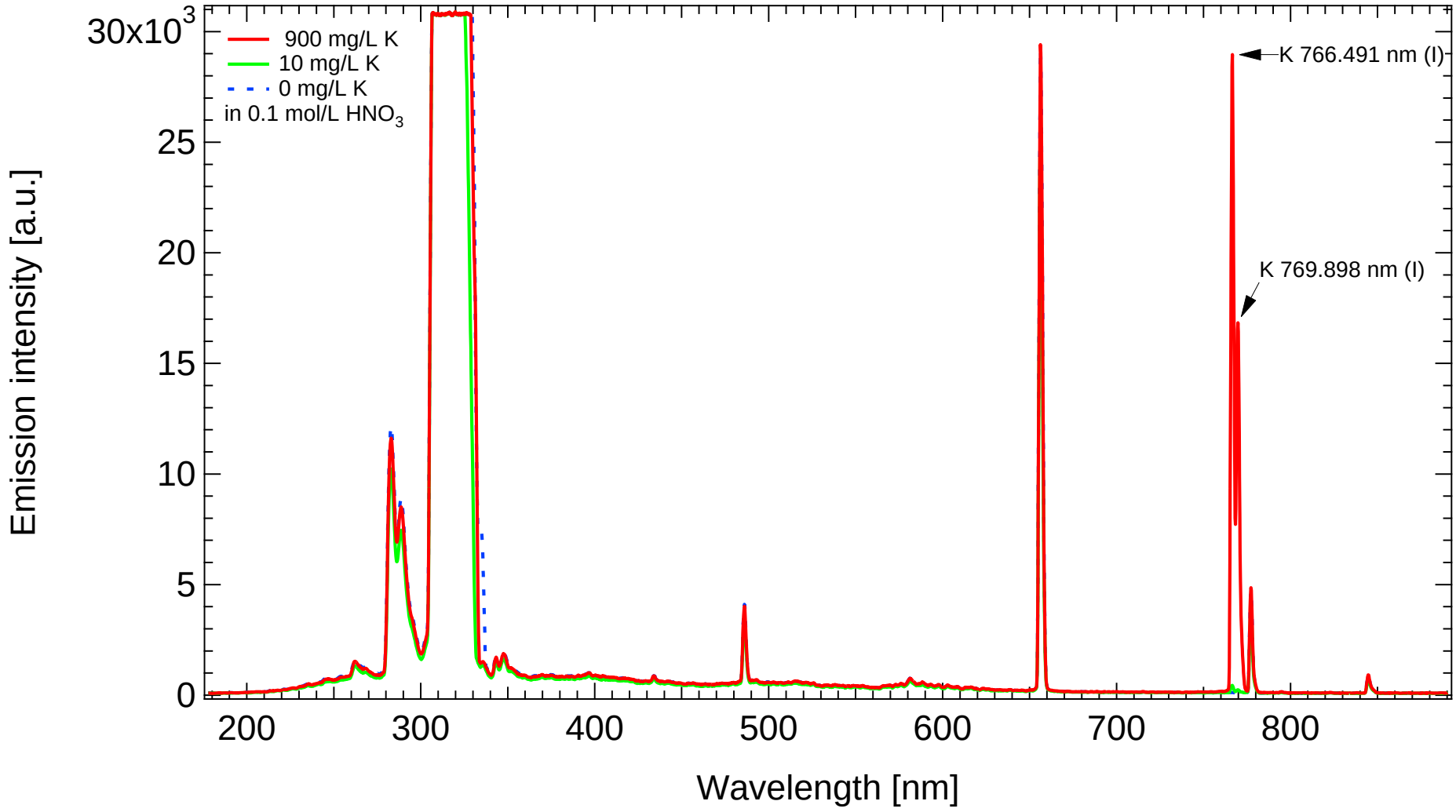
LepiCuve-C



K

MH-5000 s2086 Conditions: 750 V, (ON: 2 ms / OFF: 40 ms) × 20 pulses

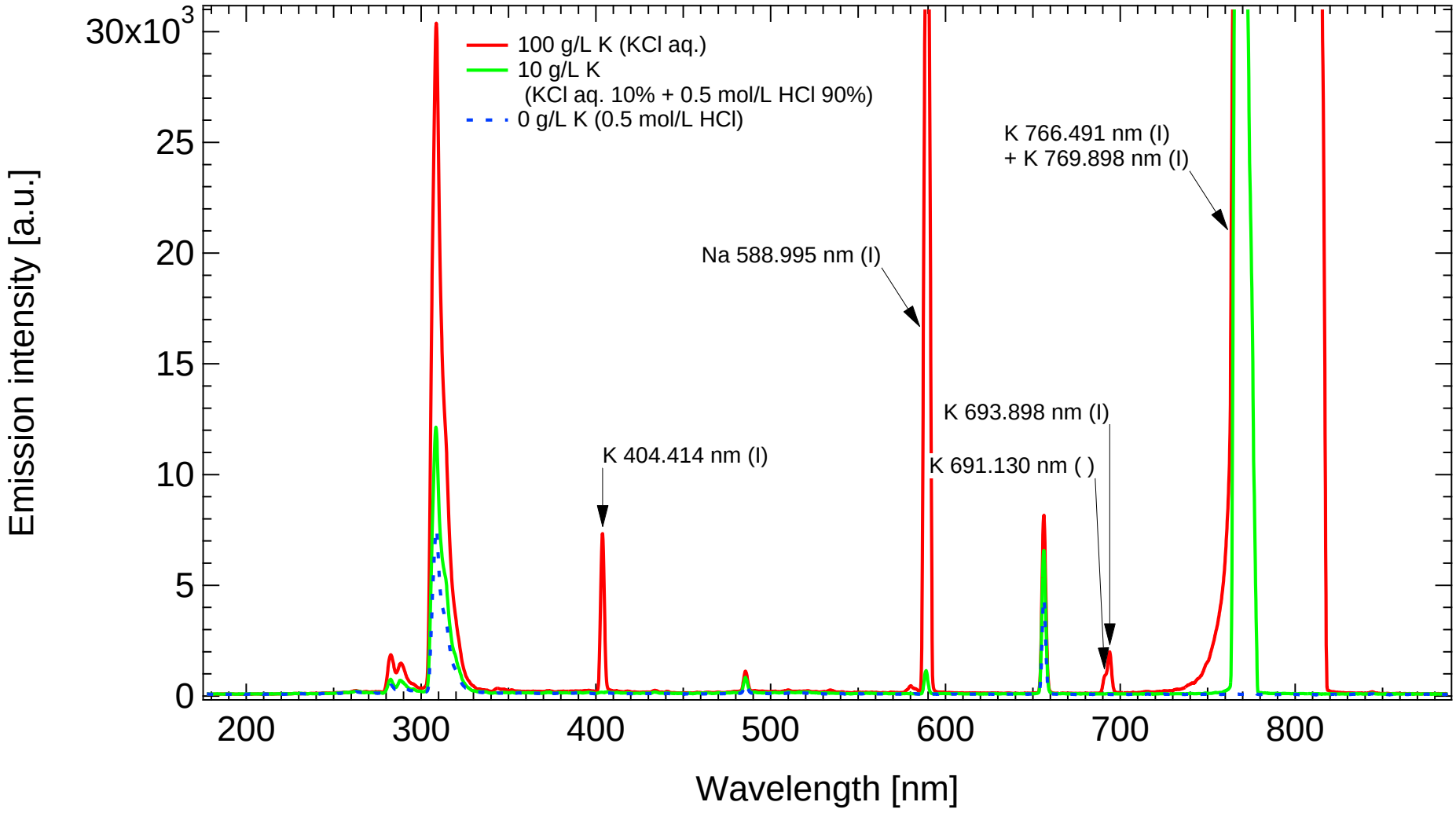
LepiCuve-C



K

MH-5000 s2086 Conditions: 500 V, (ON: 2 ms / OFF: 50 ms) × 20 pulses

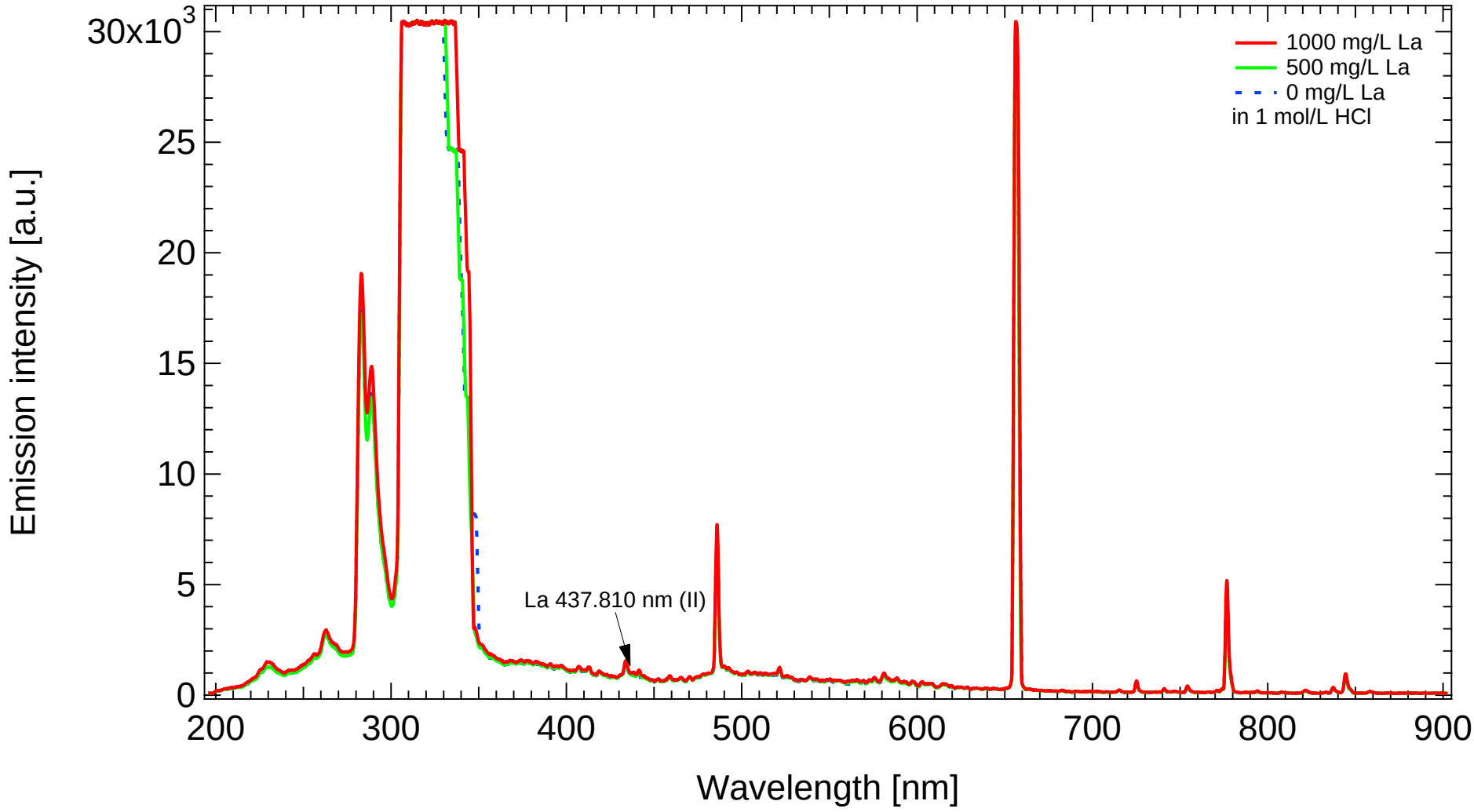
LepiCuve-C



La

MH-5000 s2086 Conditions: 650 V, (ON: 2 ms / OFF: 60 ms) × 20 pulses

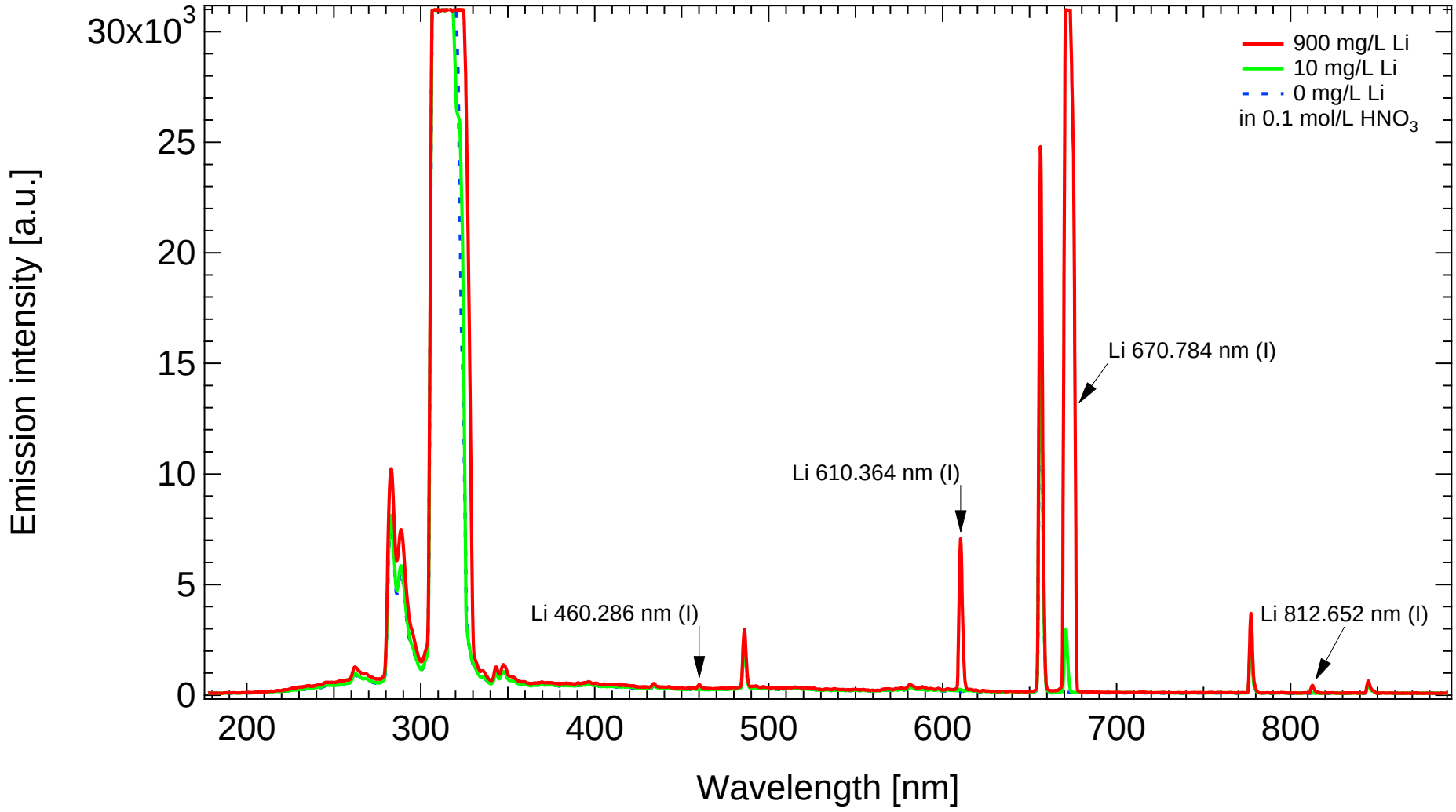
LepiCuve-C



Li

MH-5000 s2086 Conditions: 750 V, (ON: 2 ms / OFF: 40 ms) × 10 pulses

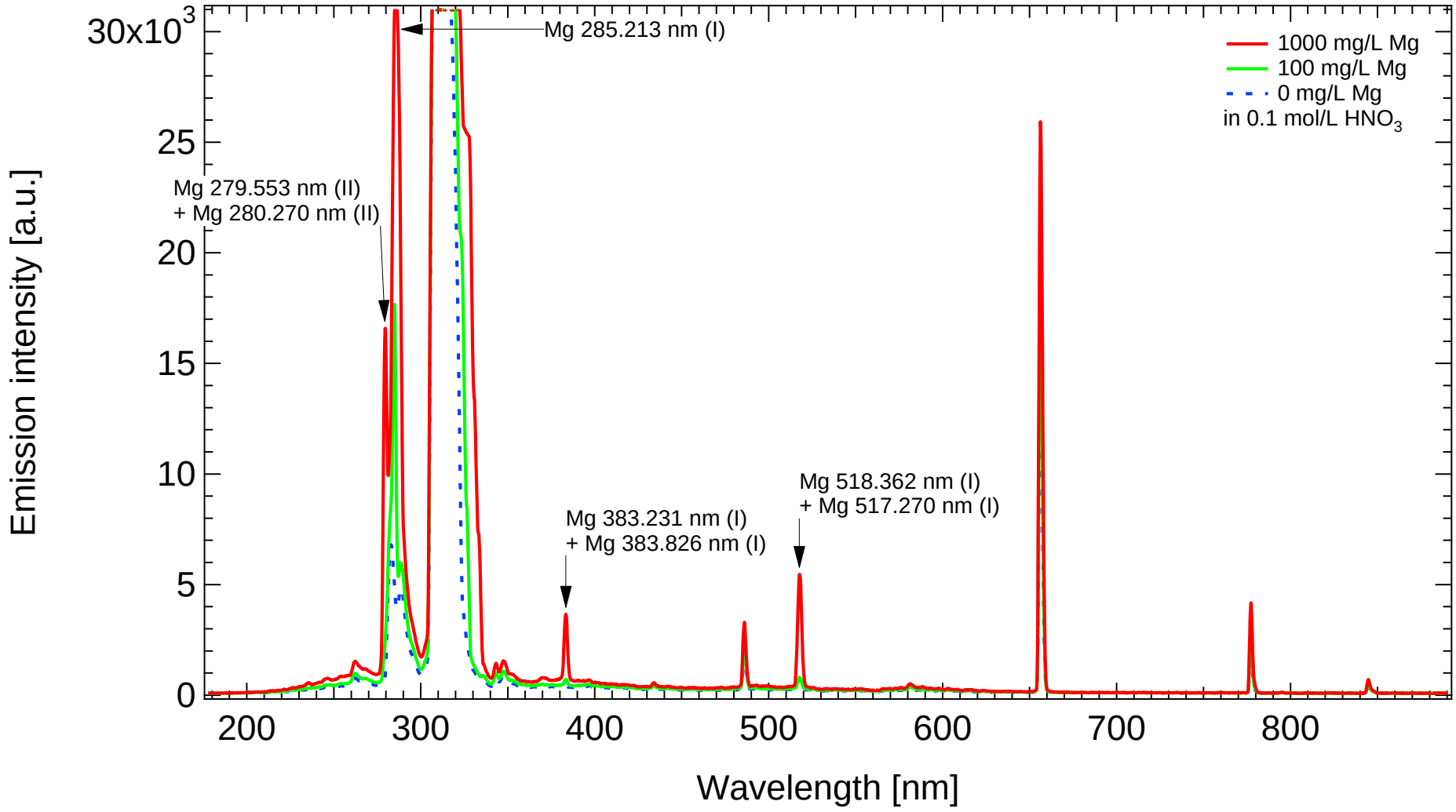
LepiCuve-C



Mg

MH-5000 s2086 Conditions: 750 V, (ON: 2 ms / OFF: 40 ms) × 10 pulses

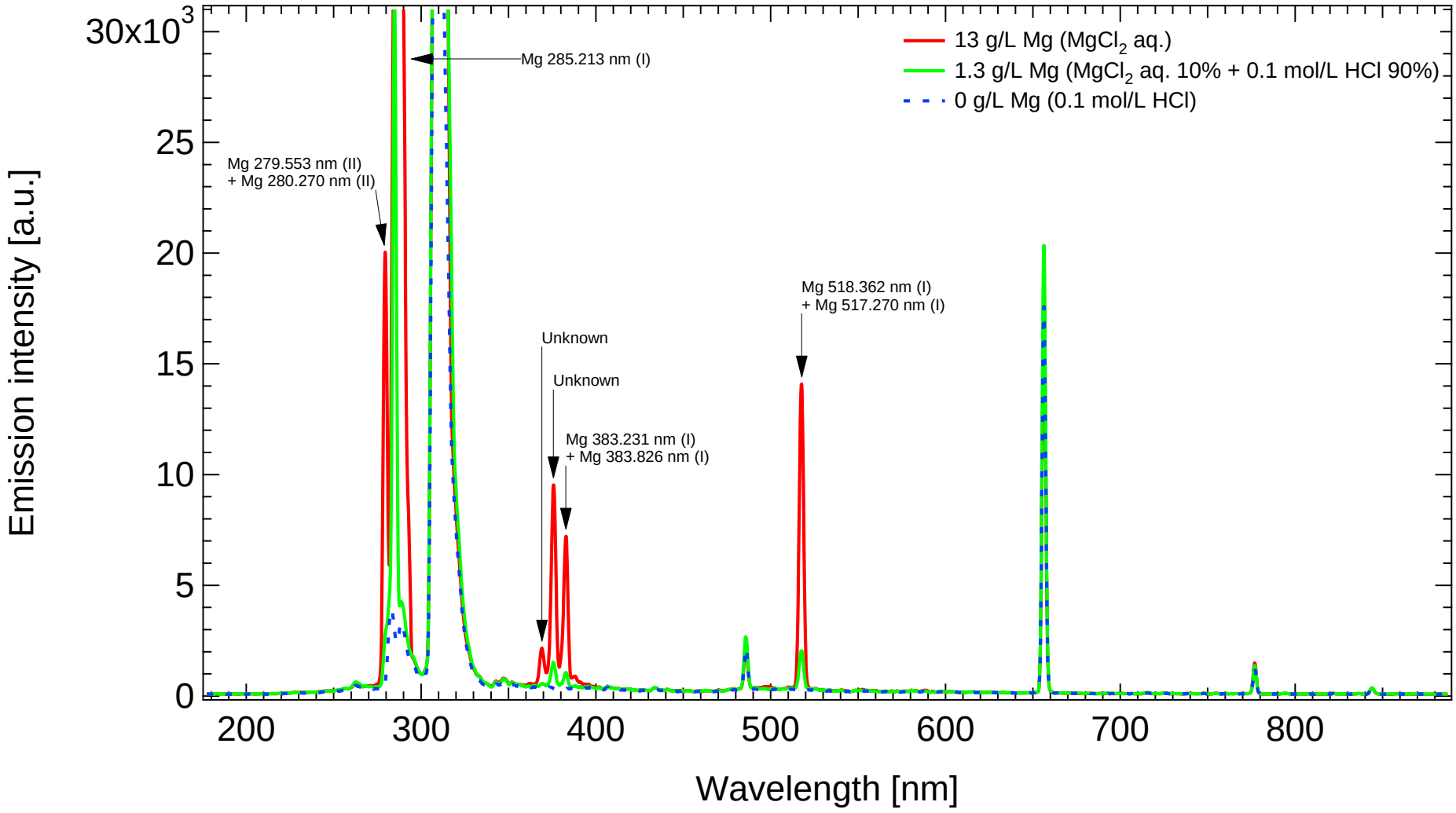
LepiCuve-C



Mg

MH-5000 s2086
LepiCuve-C

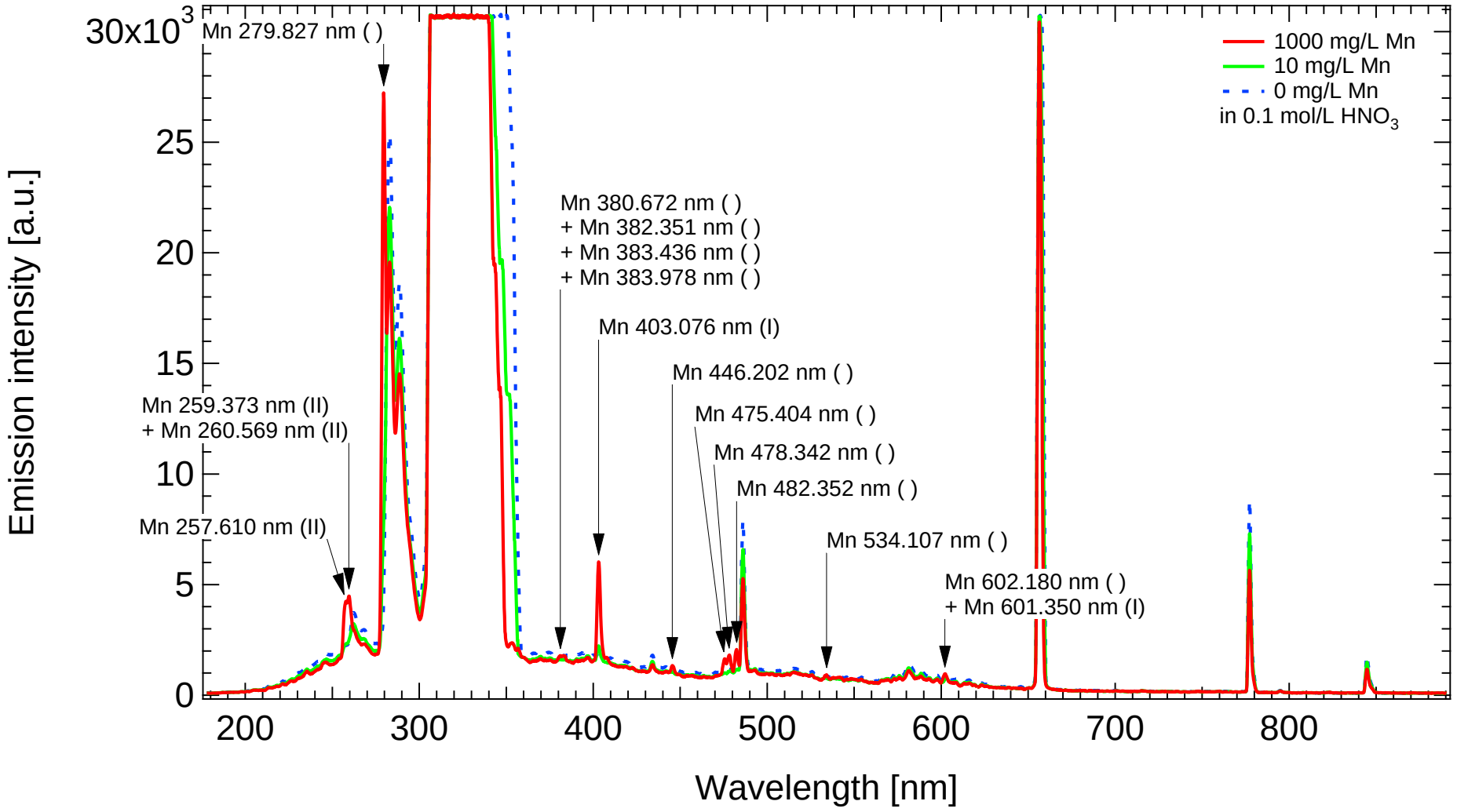
Conditions: 650 V, (ON: 2 ms / OFF: 40 ms) × 40 pulses



Mn

MH-5000 s2086
LepiCuve-C

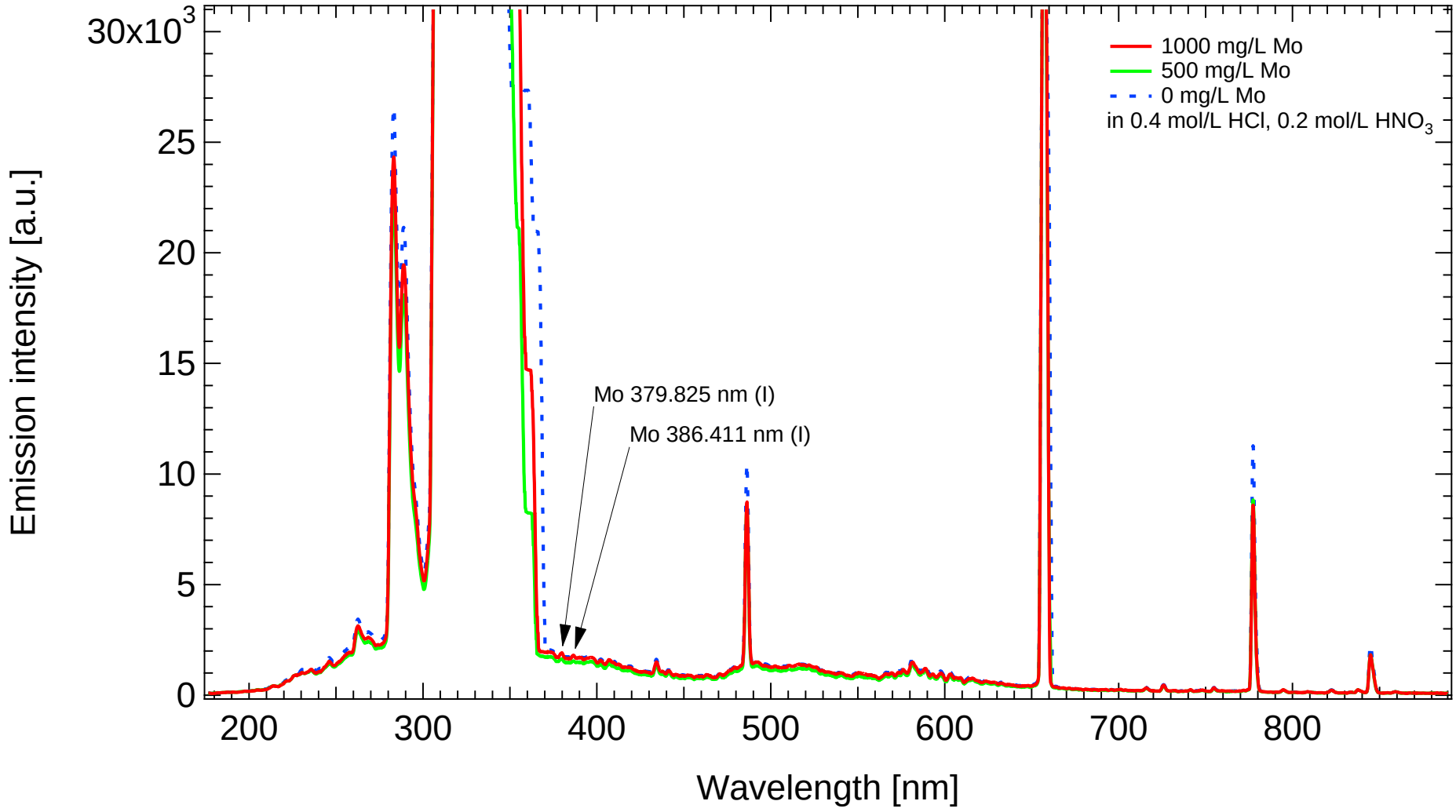
Conditions: 750 V, (ON: 2 ms / OFF: 40 ms) × 30 pulses



Mo

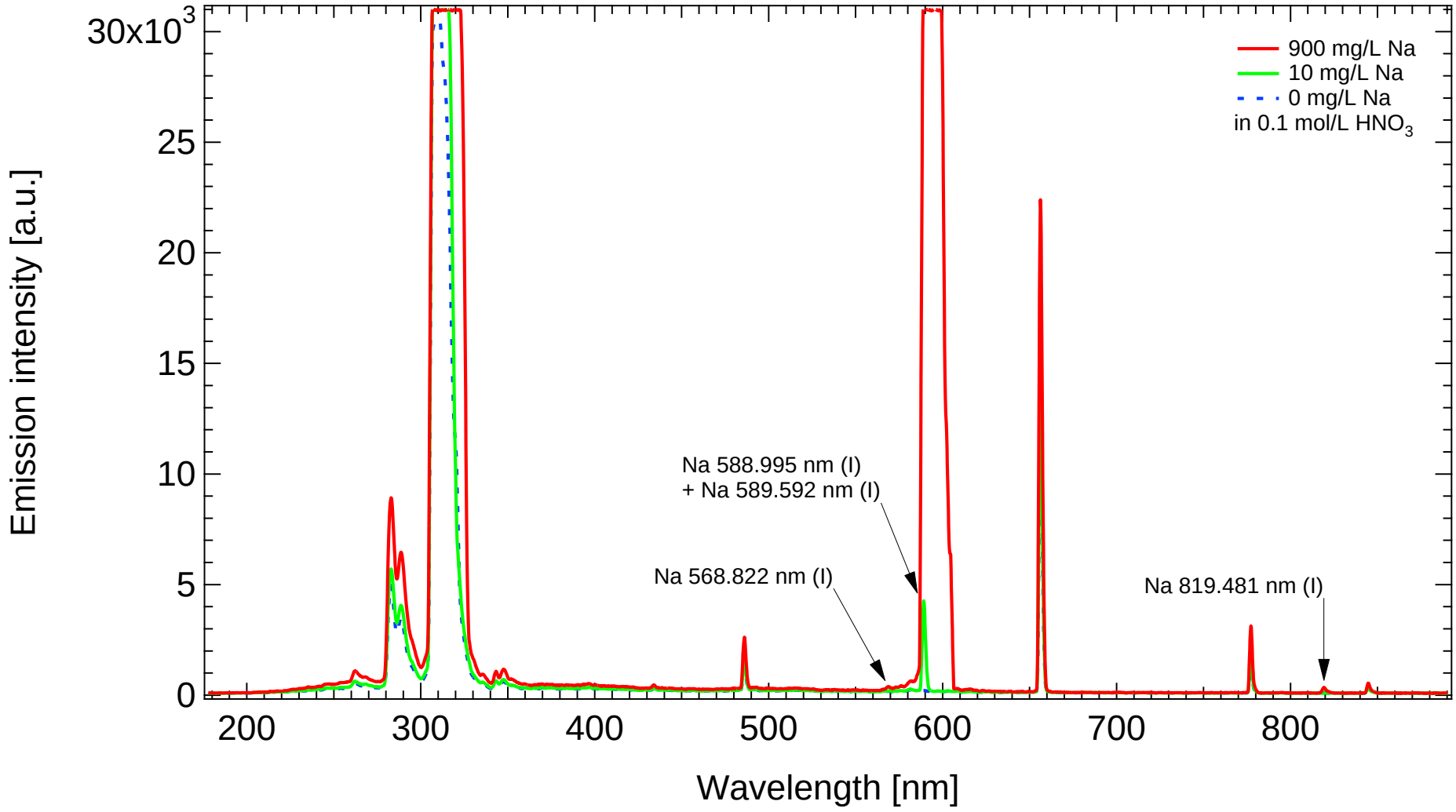
MH-5000 s2086 Conditions: 700 V, (ON: 2 ms / OFF: 60 ms) × 20 pulses

LepiCuve-C



Na

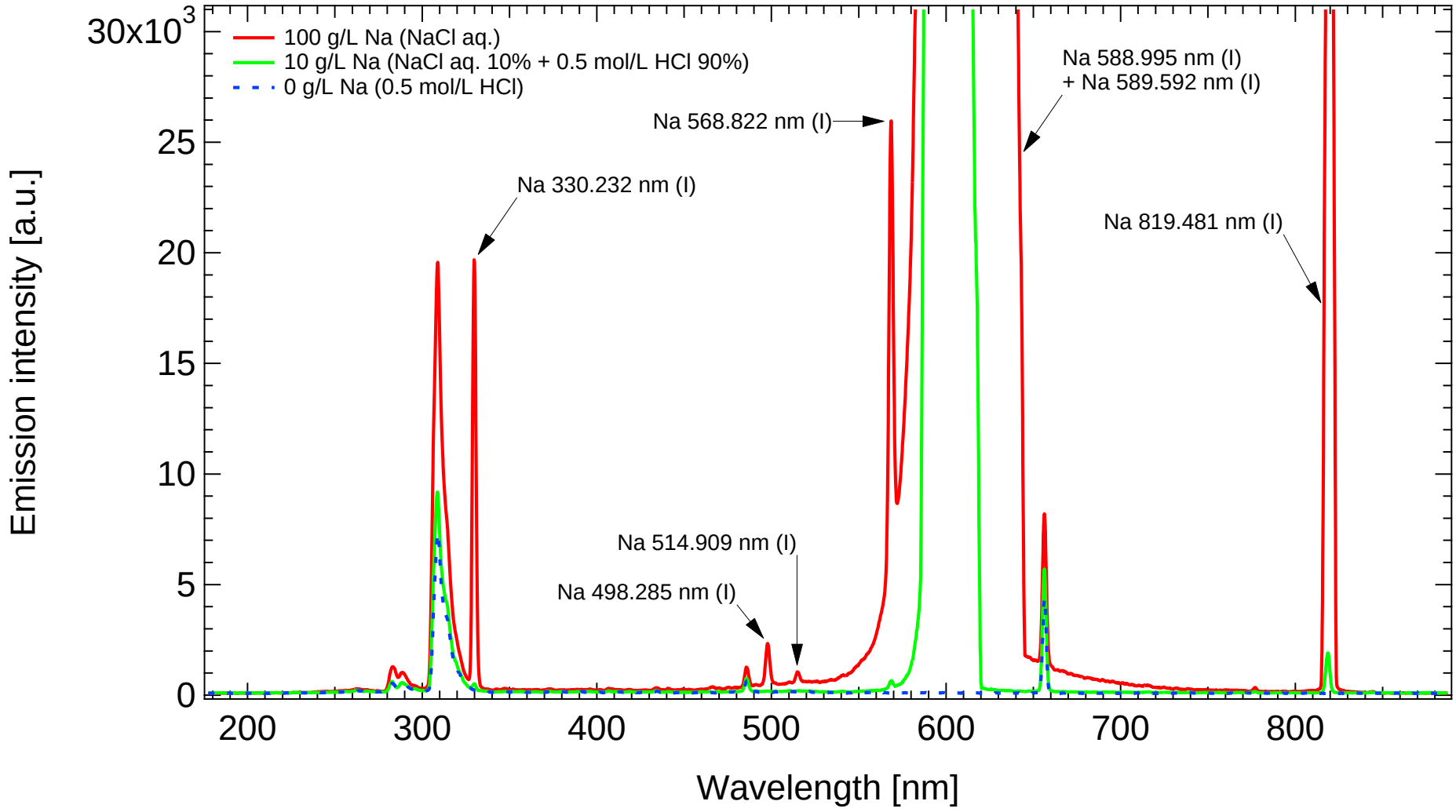
MH-5000 s2086 Conditions: 750 V, (ON: 2 ms / OFF: 40 ms) × 10 pulses
LepiCuve-C



Na

MH-5000 s2086 Conditions: 500 V, (ON: 2 ms / OFF: 50 ms) × 20 pulses

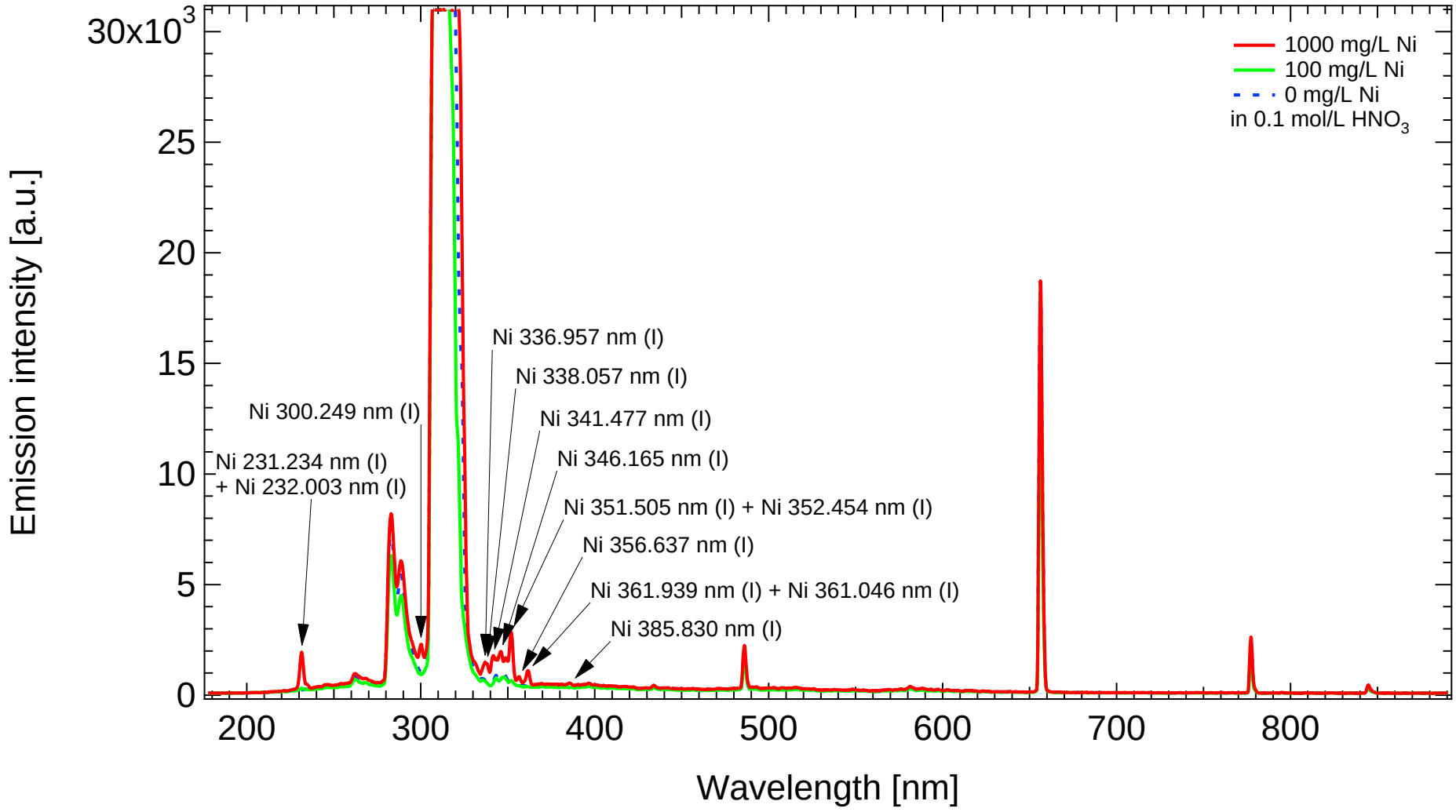
LepiCuve-C



Ni

MH-5000 s2086 Conditions: 750 V, (ON: 2 ms / OFF: 40 ms) × 10 pulses

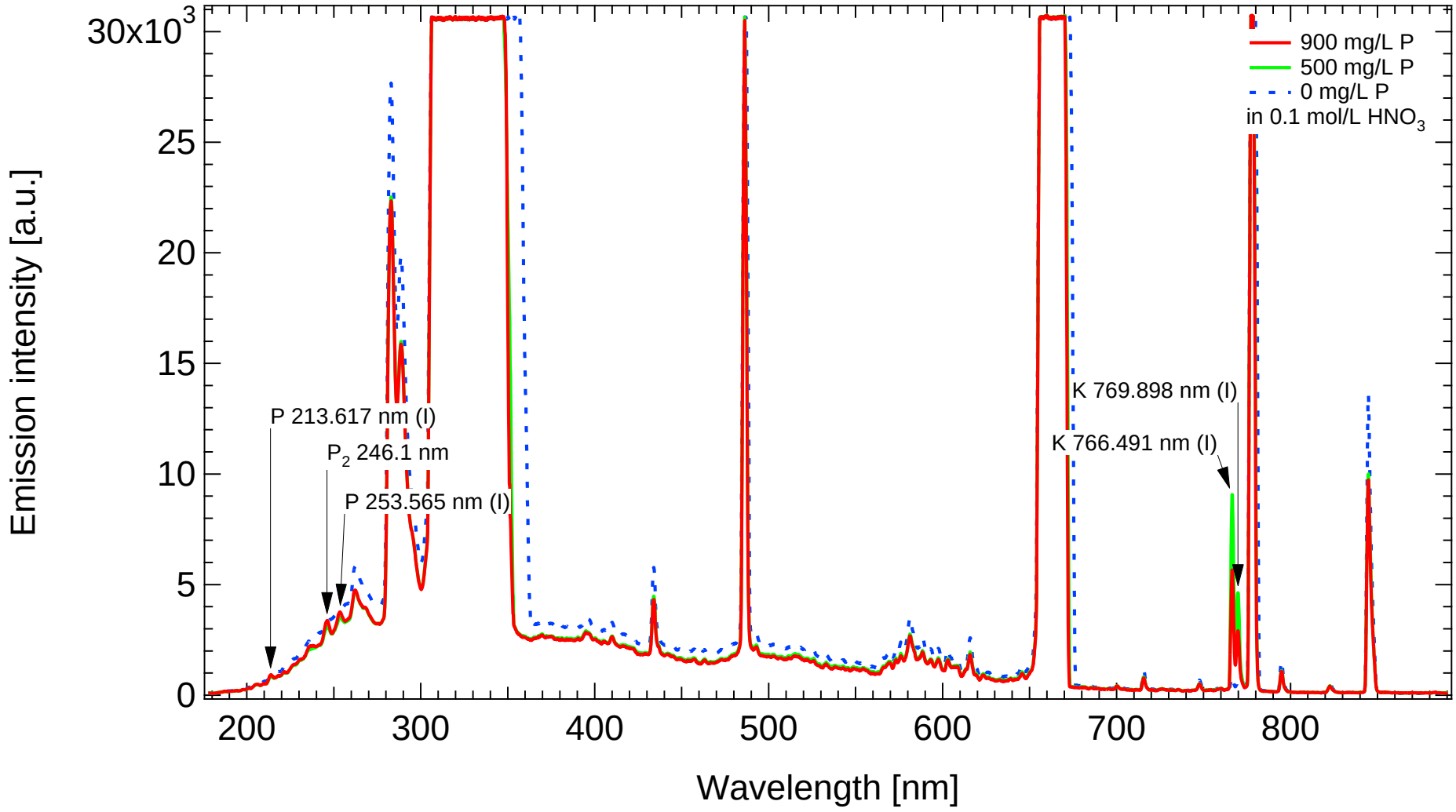
LepiCuve-C



P

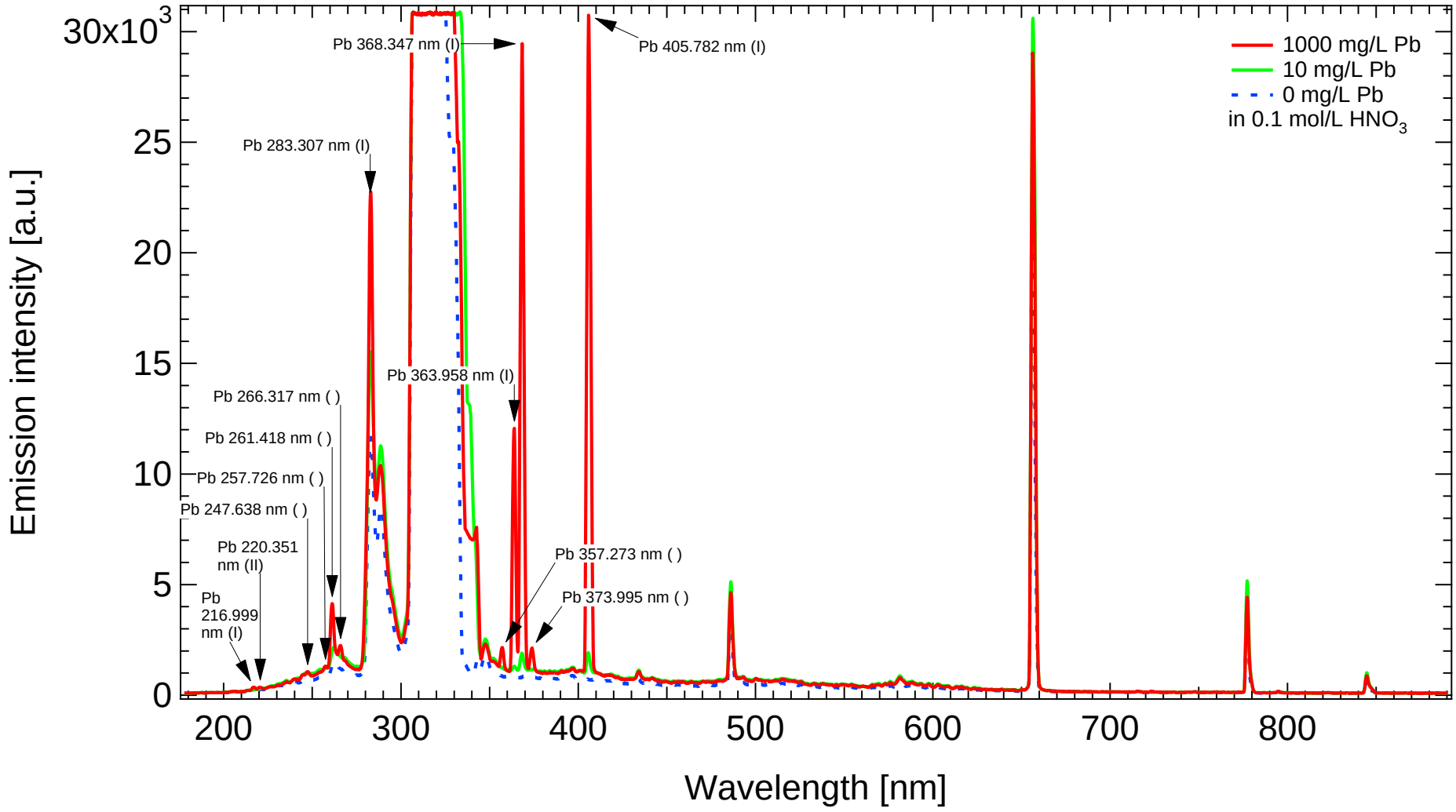
MH-5000 s2086 Conditions: 750 V, (ON: 2 ms / OFF: 40 ms) × 40 pulses

LepiCuve-C



Pb

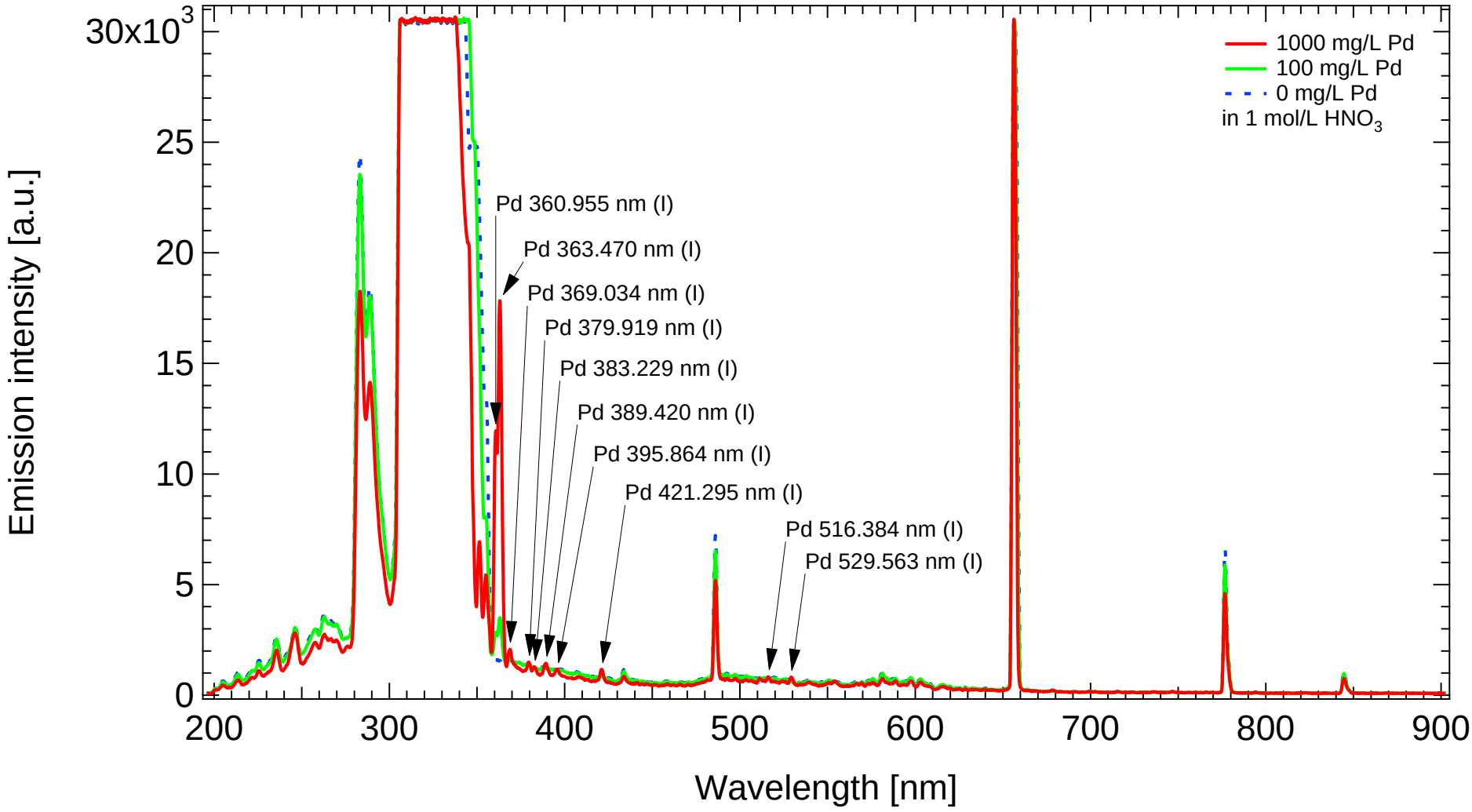
MH-5000 s2086 Conditions: 750 V, (ON: 2 ms / OFF: 40 ms) × 20 pulses
LepiCuve-C



Pd

MH-5000 s2086 Conditions: 650 V, (ON: 2 ms / OFF: 60 ms) × 20 pulses

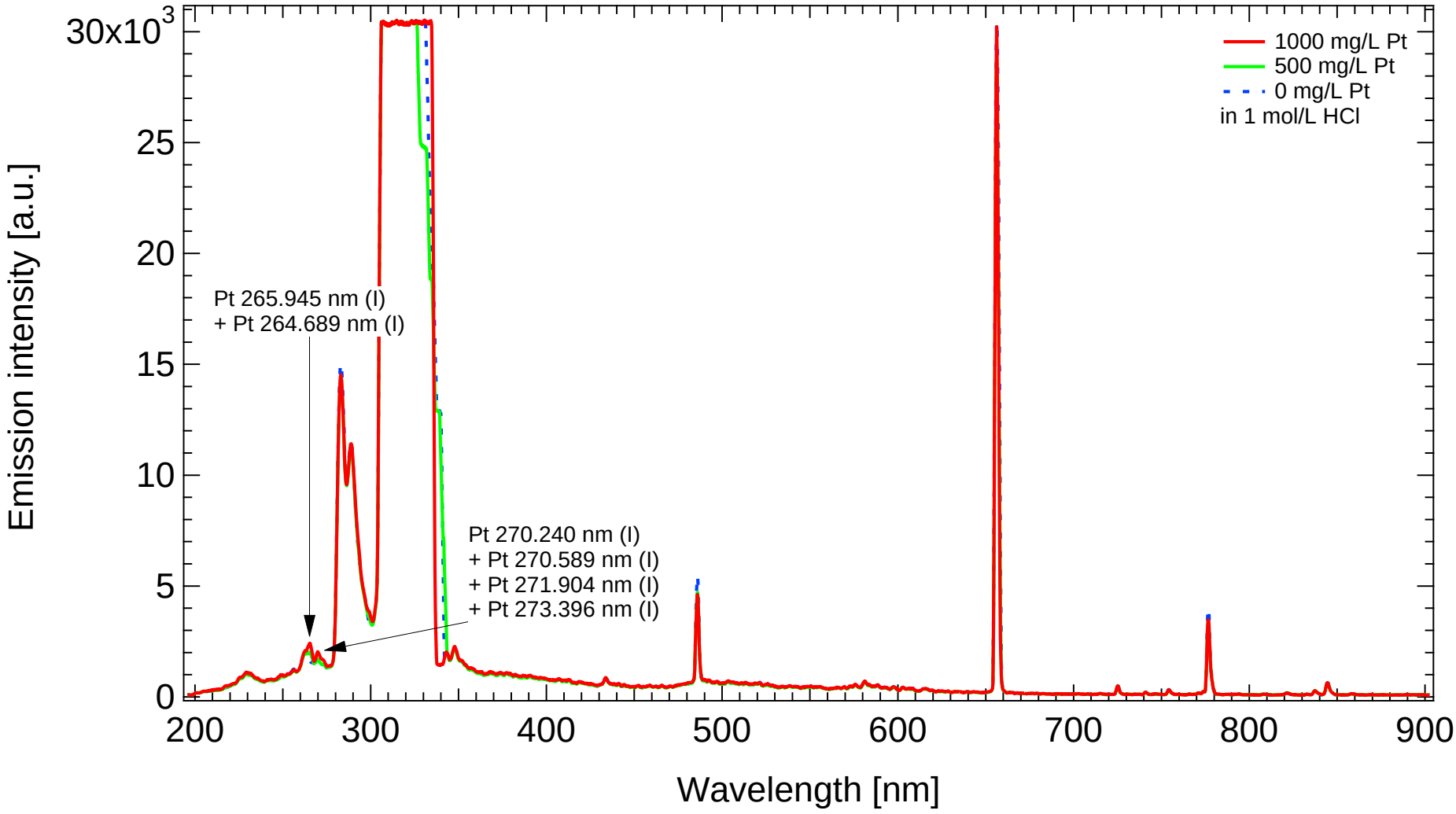
LepiCuve-C



Pt

MH-5000 s2086 Conditions: 650 V, (ON: 2 ms / OFF: 60 ms) × 20 pulses

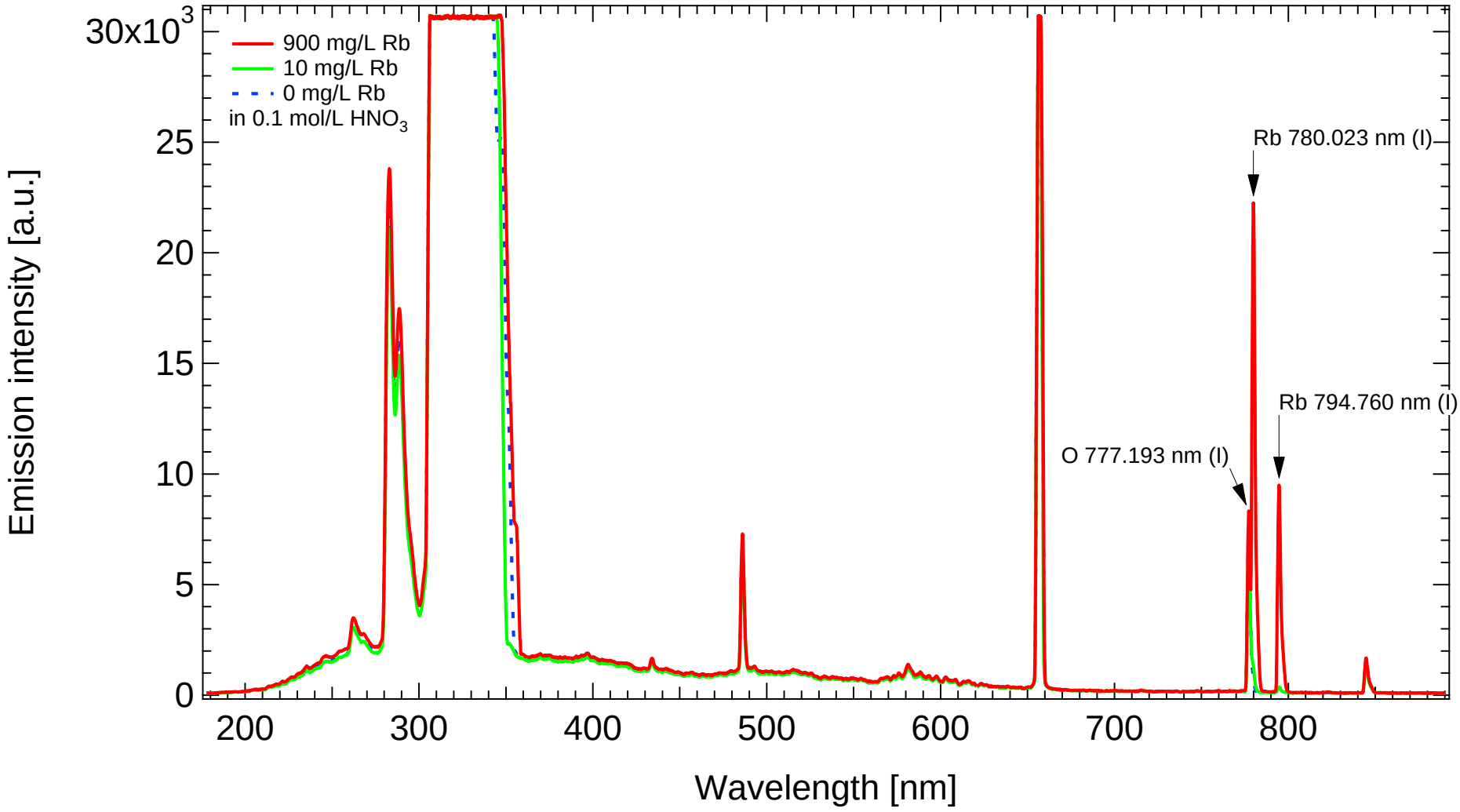
LepiCuve-C



Rb

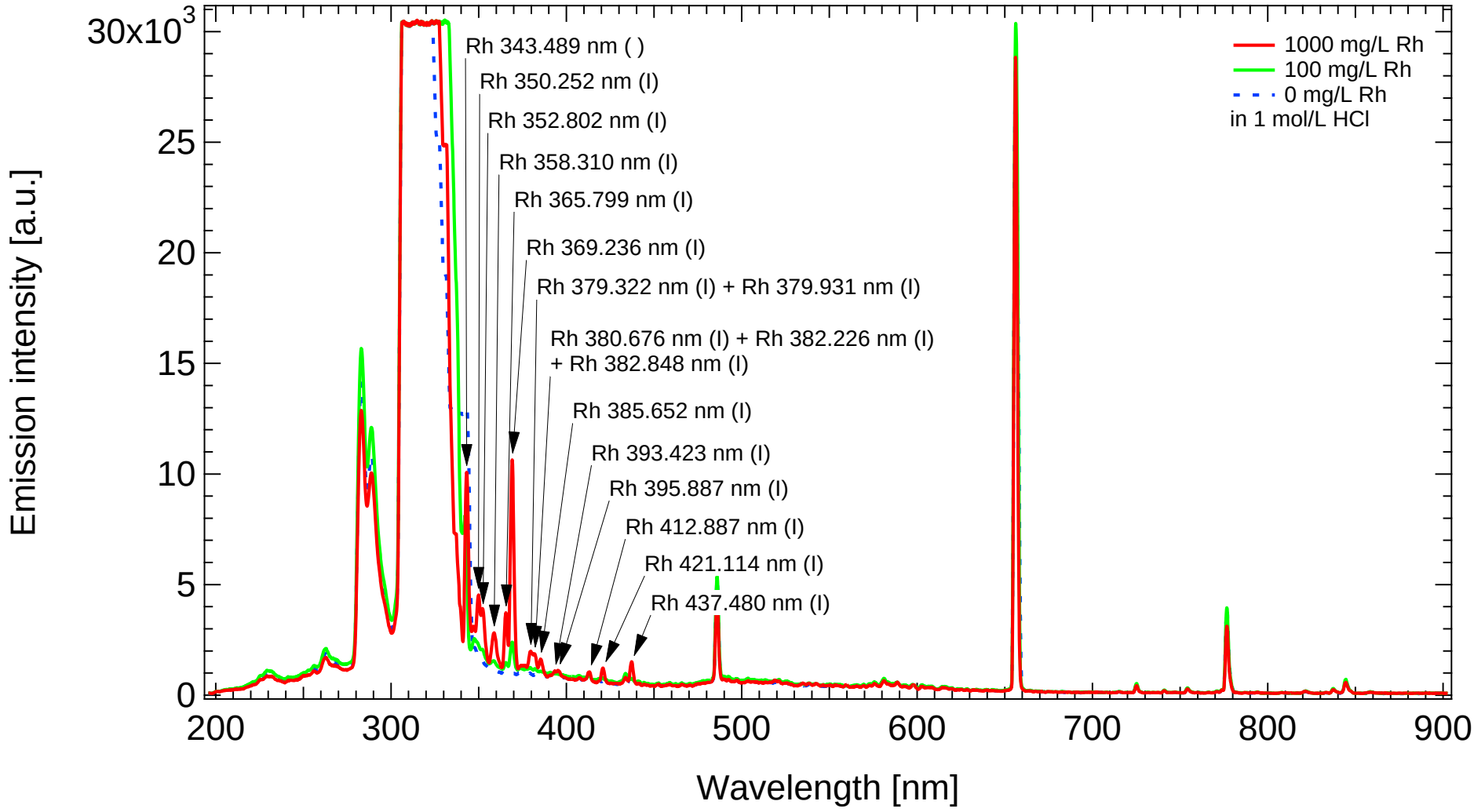
MH-5000 s2086 Conditions: 750 V, (ON: 2 ms / OFF: 40 ms) × 30 pulses

LepiCuve-C



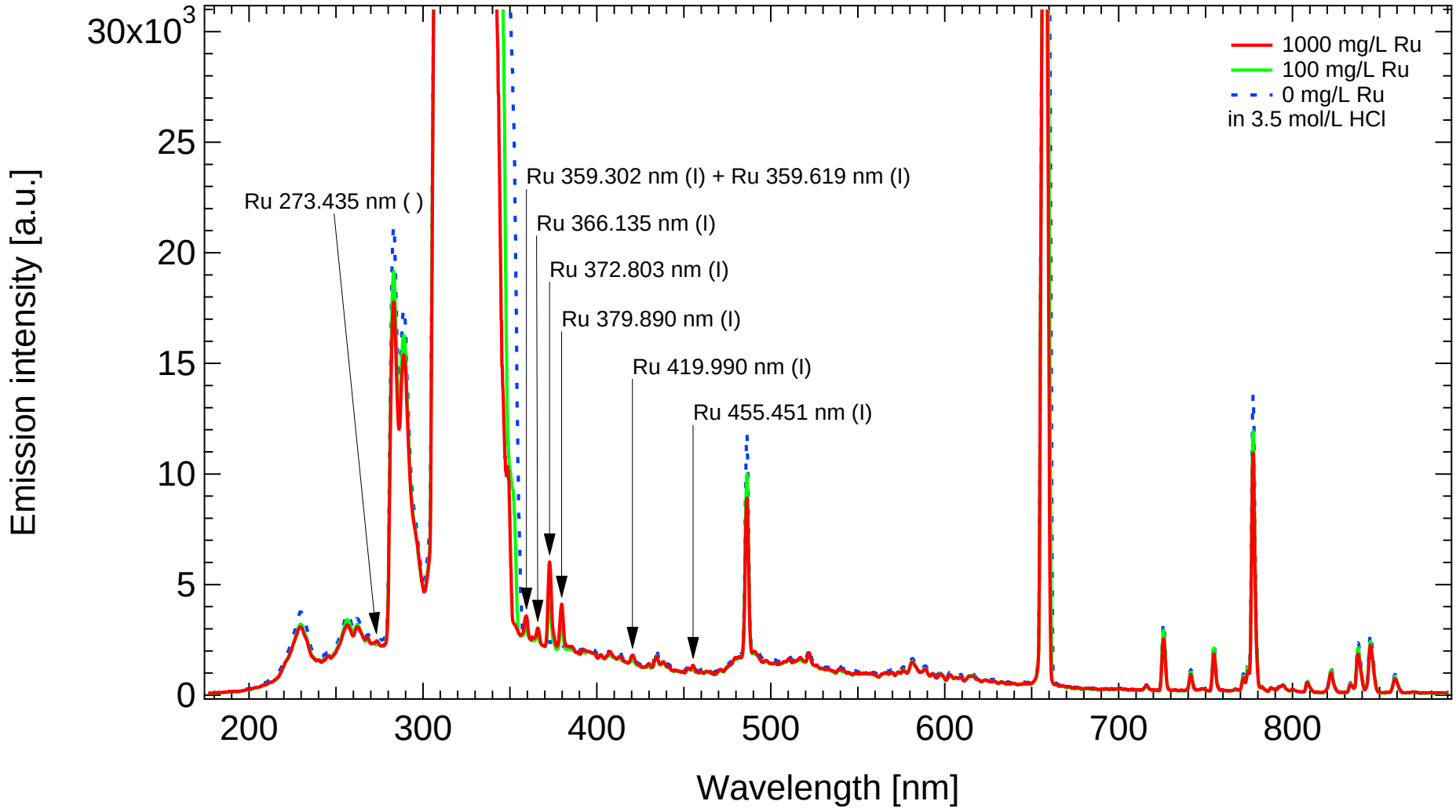
Rh

MH-5000 s2086 Conditions: 650 V, (ON: 2 ms / OFF: 60 ms) × 20 pulses
LepiCuve-C



Ru

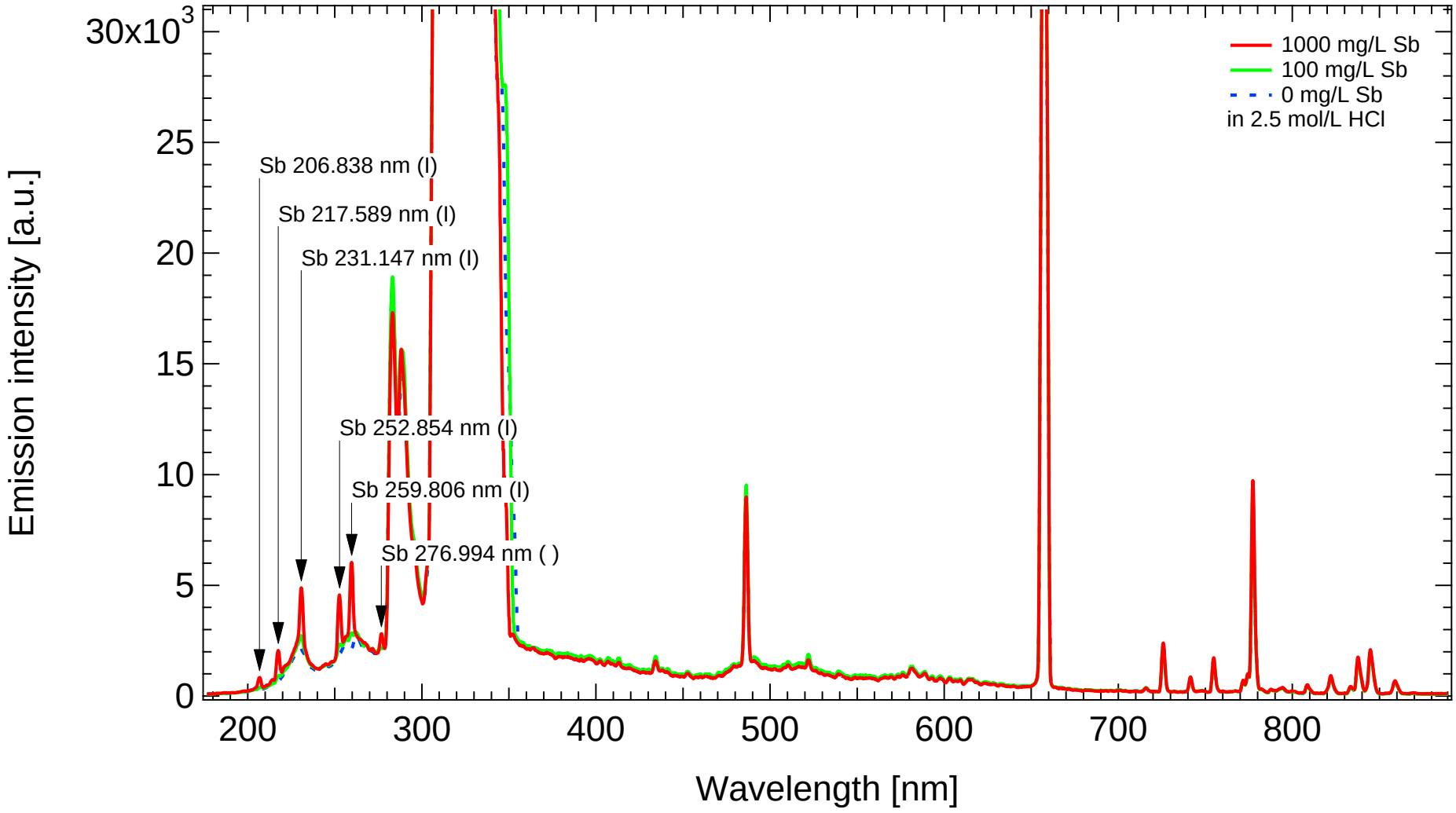
MH-5000 s2086 Conditions: 650 V, (ON: 2 ms / OFF: 110 ms) × 20 pulses
LepiCuve-C



Sb

MH-5000 s2086 Conditions: 650 V, (ON: 2 ms / OFF: 100 ms) × 20 pulses

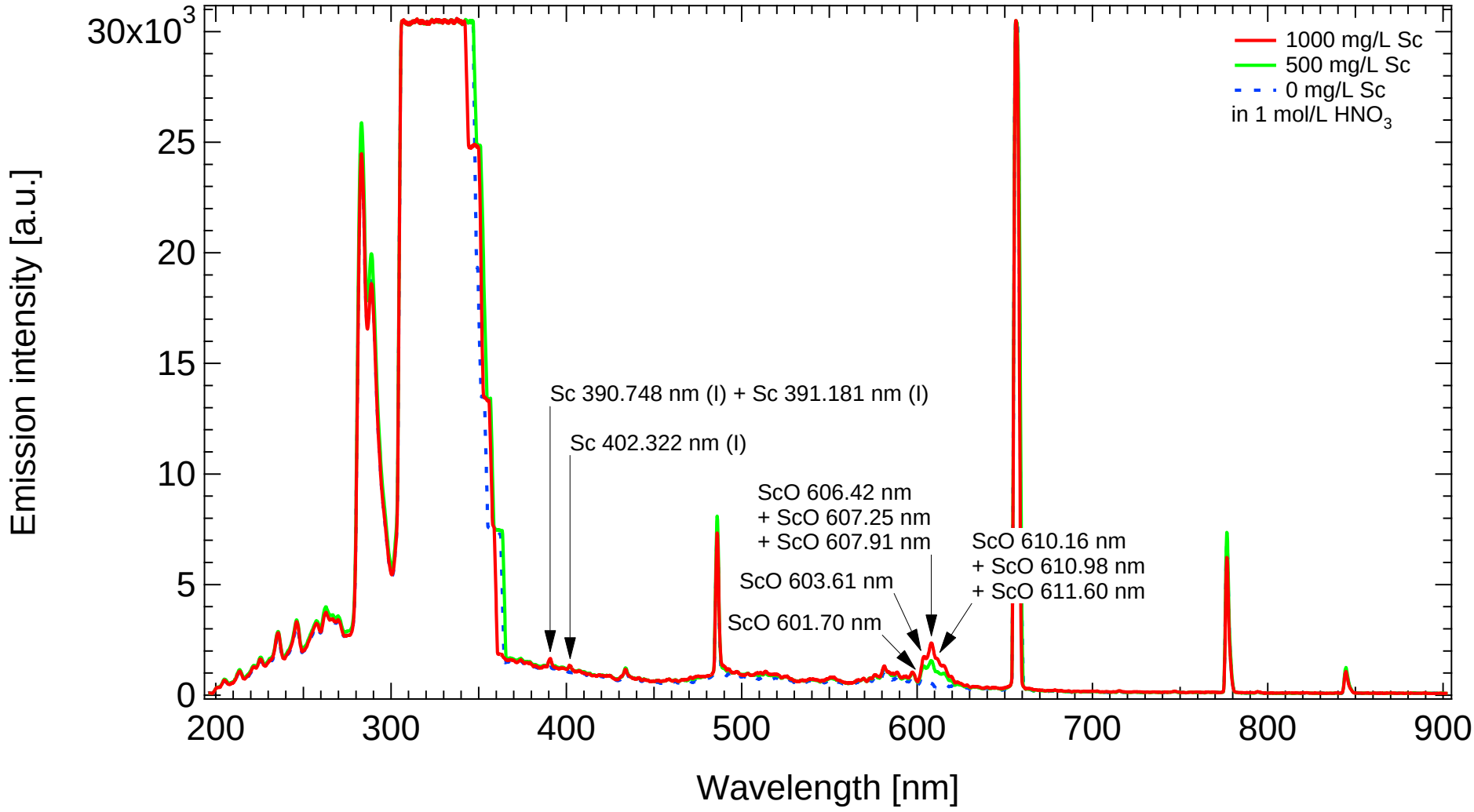
LepiCuve-C



Sc

MH-5000 s2086 Conditions: 650 V, (ON: 2 ms / OFF: 60 ms) × 20 pulses

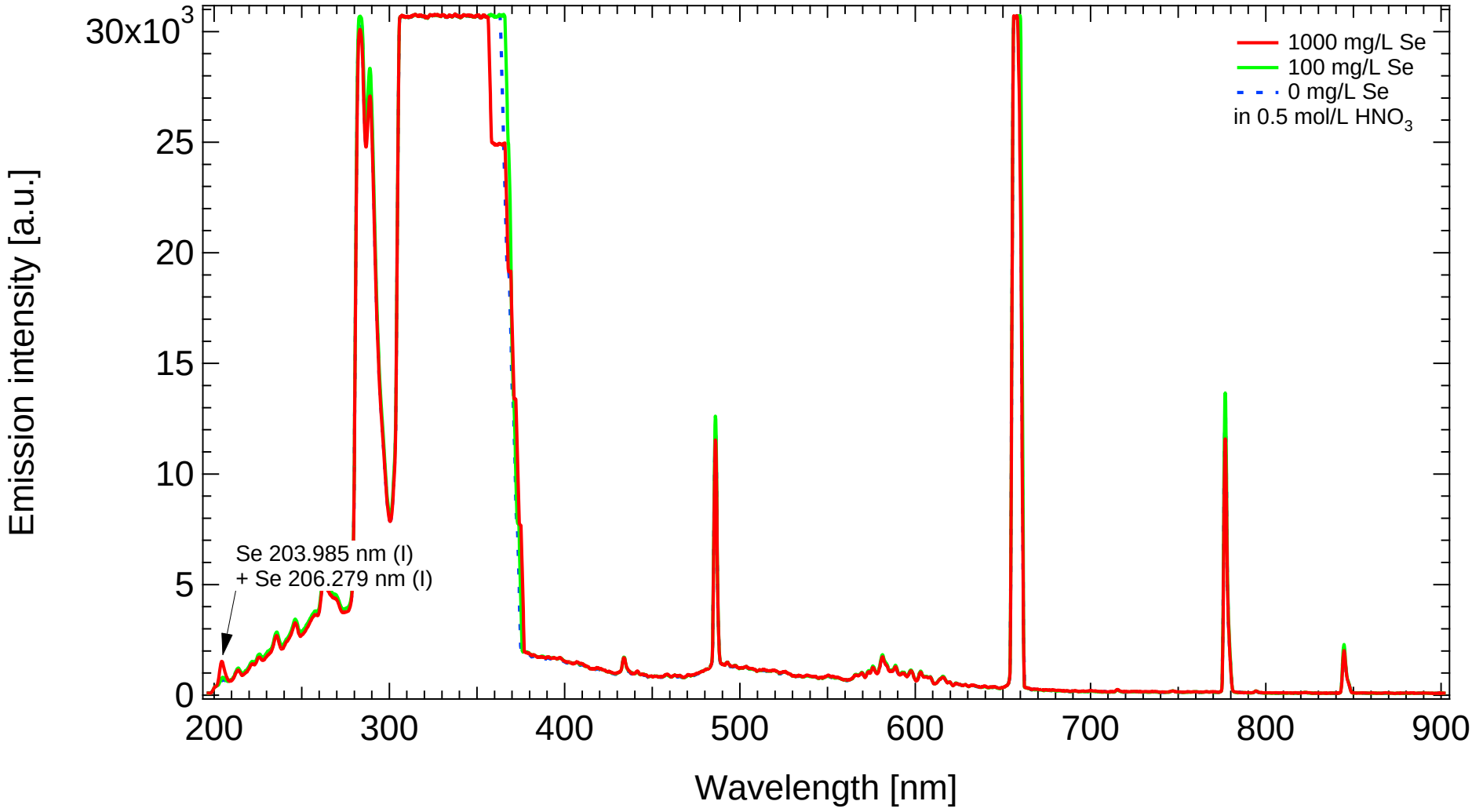
LepiCuve-C



Se

MH-5000 s2086 Conditions: 750 V, (ON: 2 ms / OFF: 50 ms) × 10 pulses

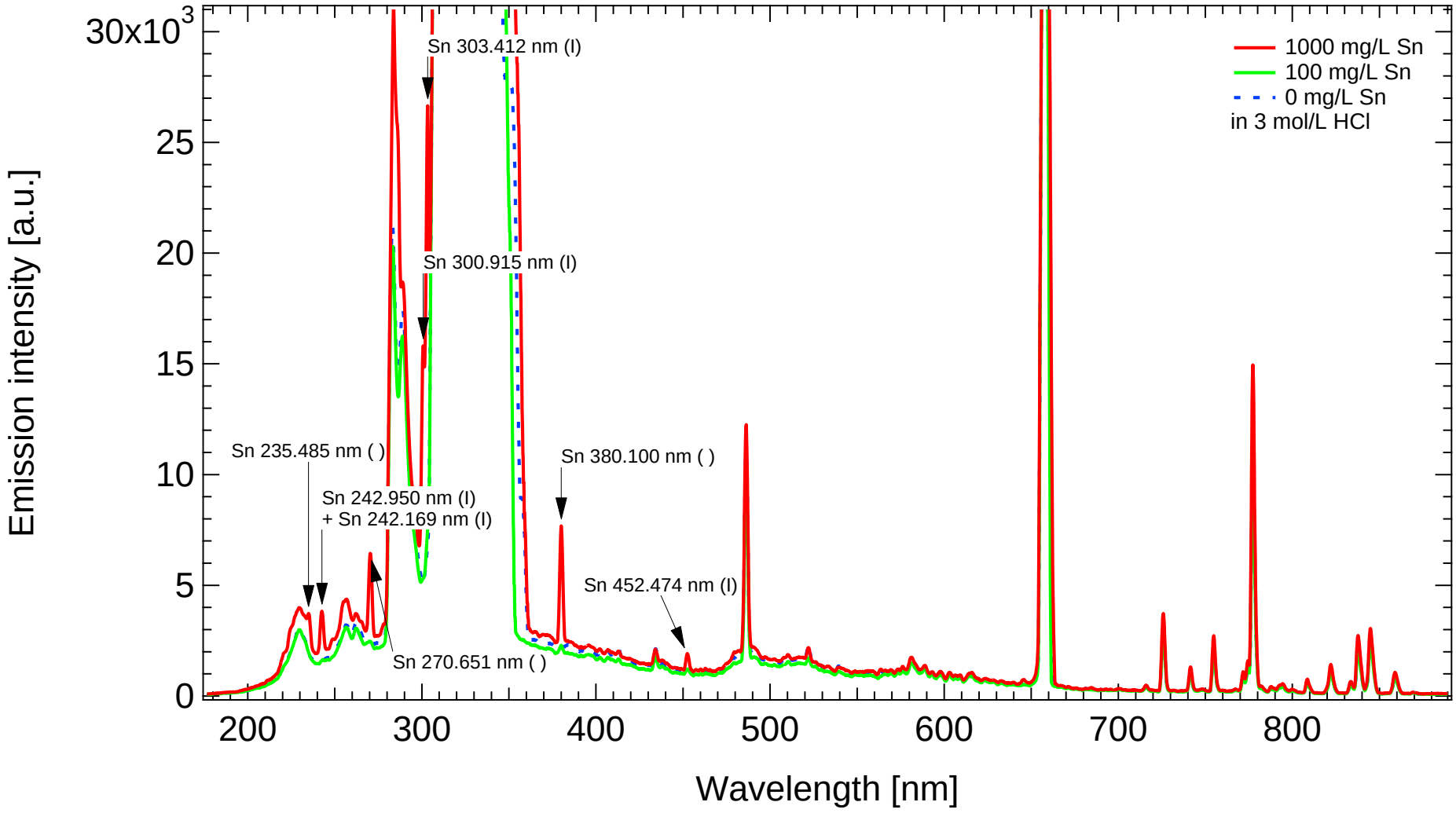
LepiCuve-C



Sn

MH-5000 s2086 Conditions: 650 V, (ON: 2 ms / OFF: 100 ms) × 20 pulses

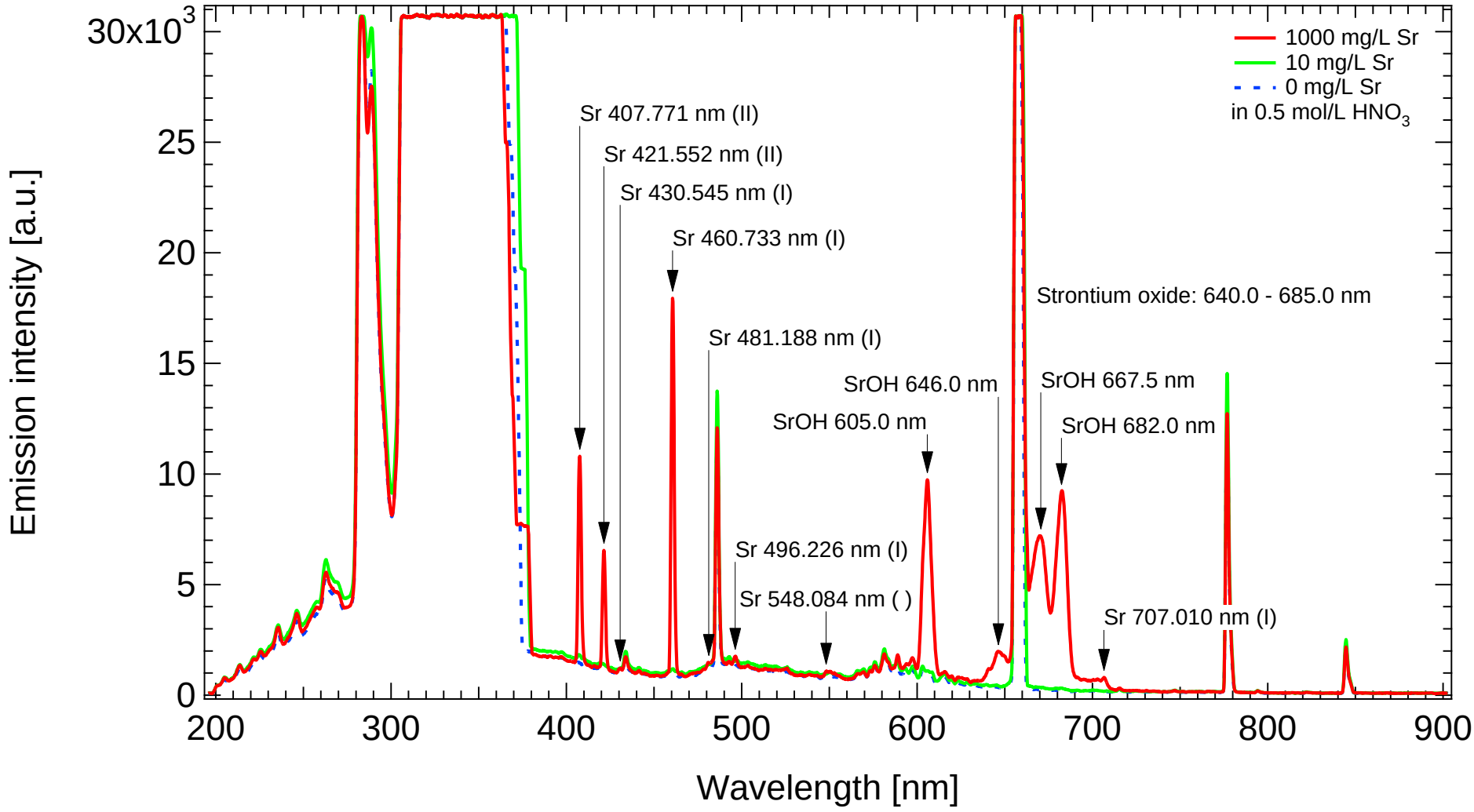
LepiCuve-C



Sr

MH-5000 s2086 Conditions: 750 V, (ON: 2 ms / OFF: 50 ms) × 10 pulses

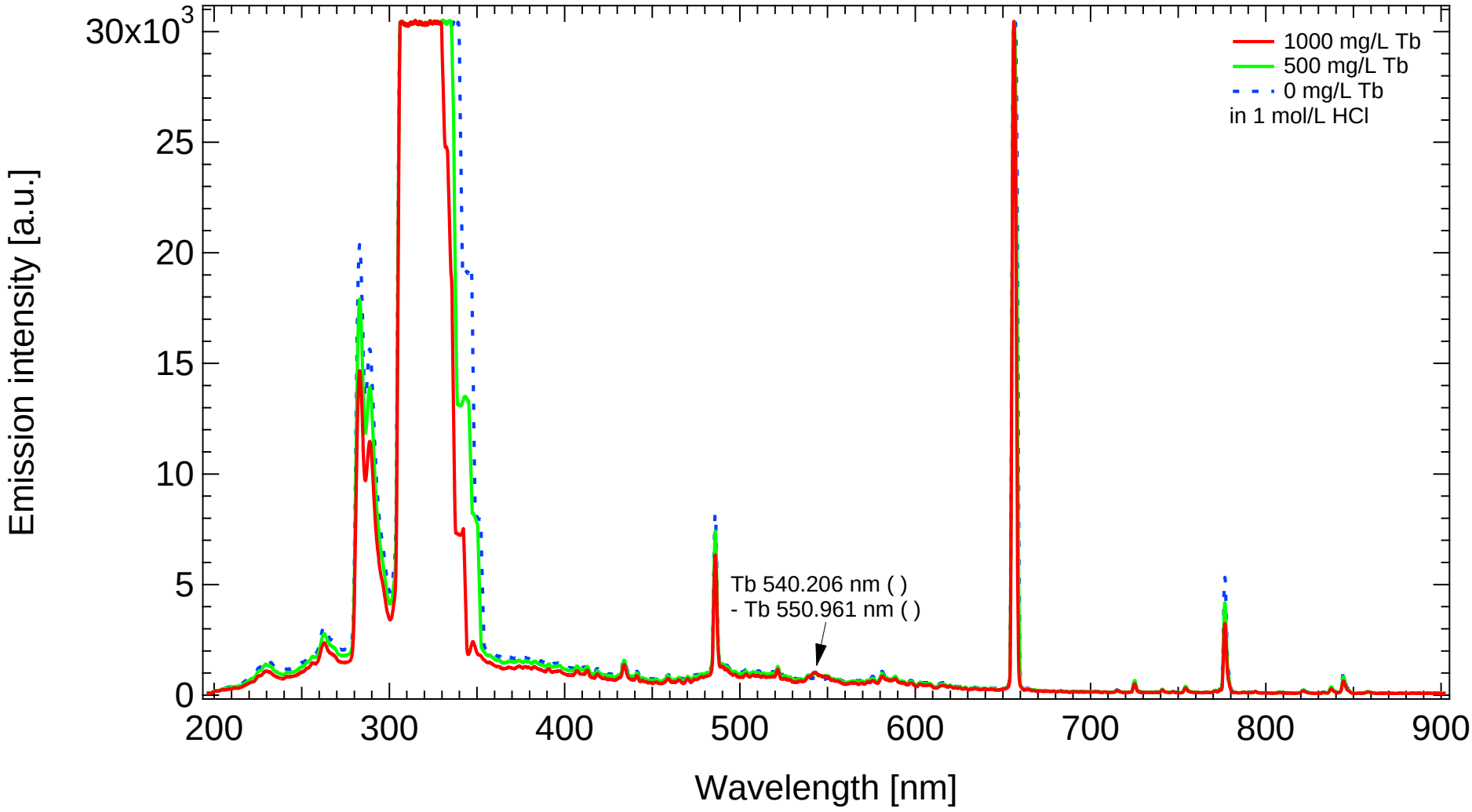
LepiCuve-C



Tb

MH-5000 s2086 Conditions: 650 V, (ON: 2 ms / OFF: 60 ms) × 20 pulses

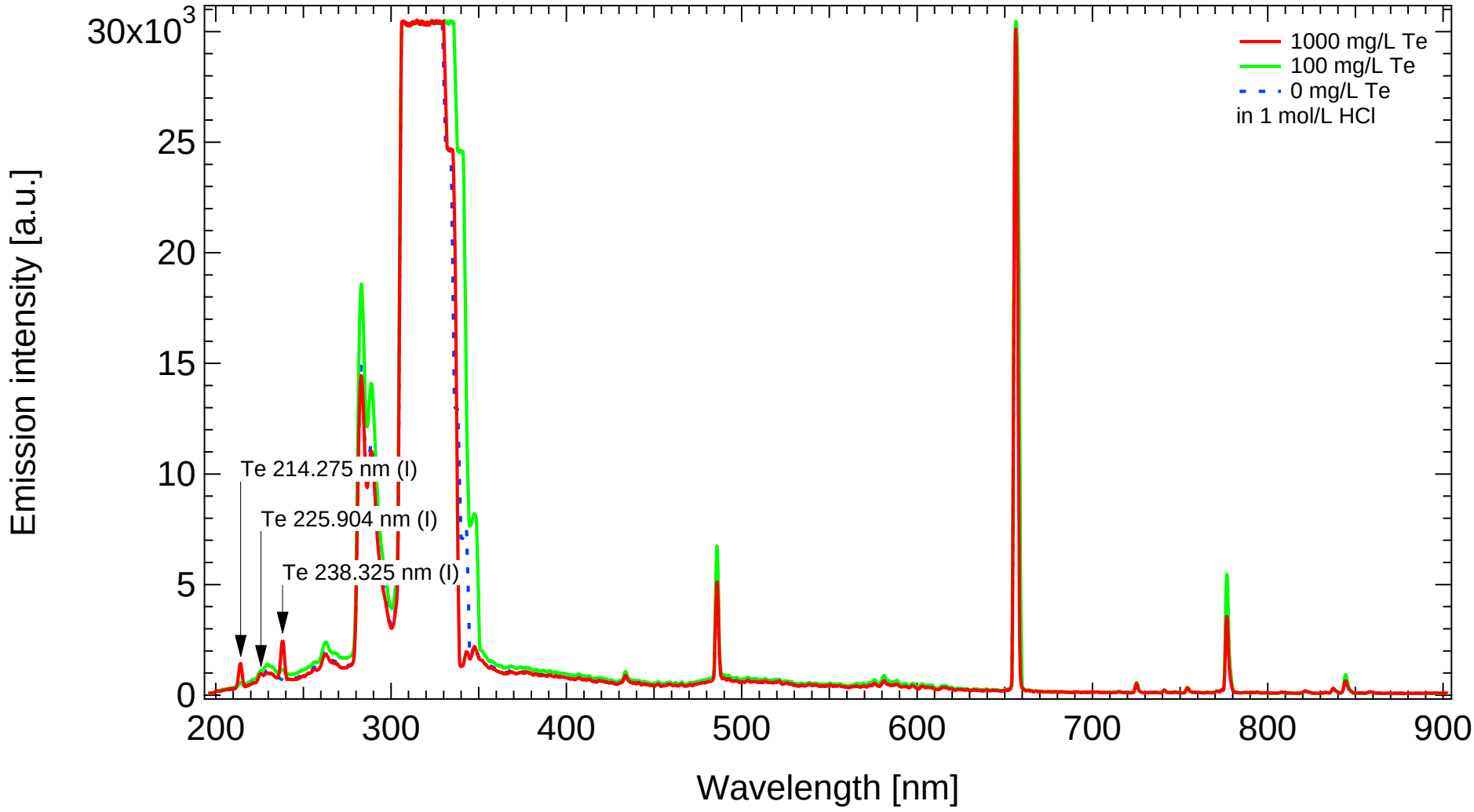
LepiCuve-C



Te

MH-5000 s2086 Conditions: 650 V, (ON: 2 ms / OFF: 60 ms) × 20 pulses

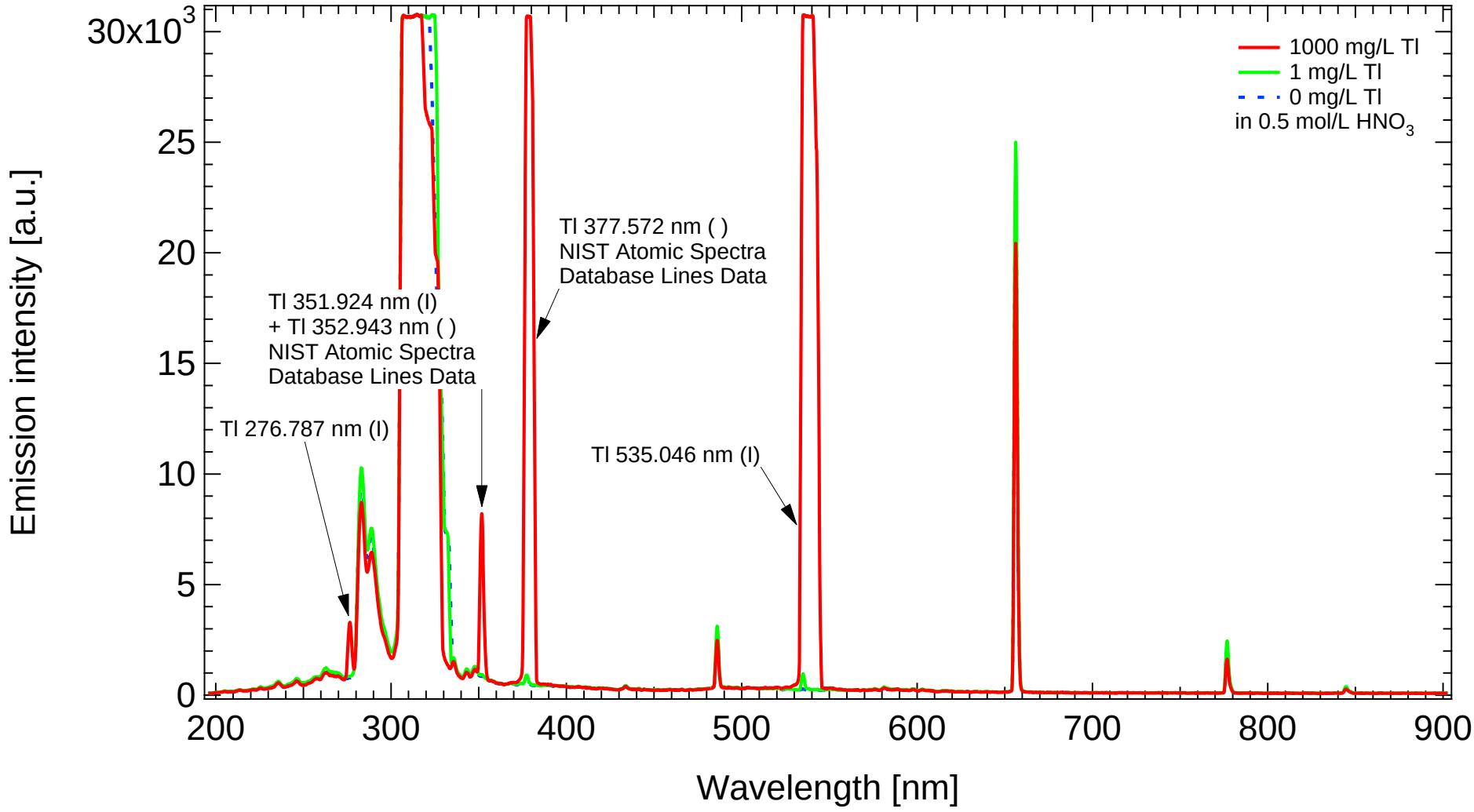
LepiCuve-C



Tl

MH-5000 s2086 Conditions: 650 V, (ON: 2 ms / OFF: 50 ms) × 10 pulses

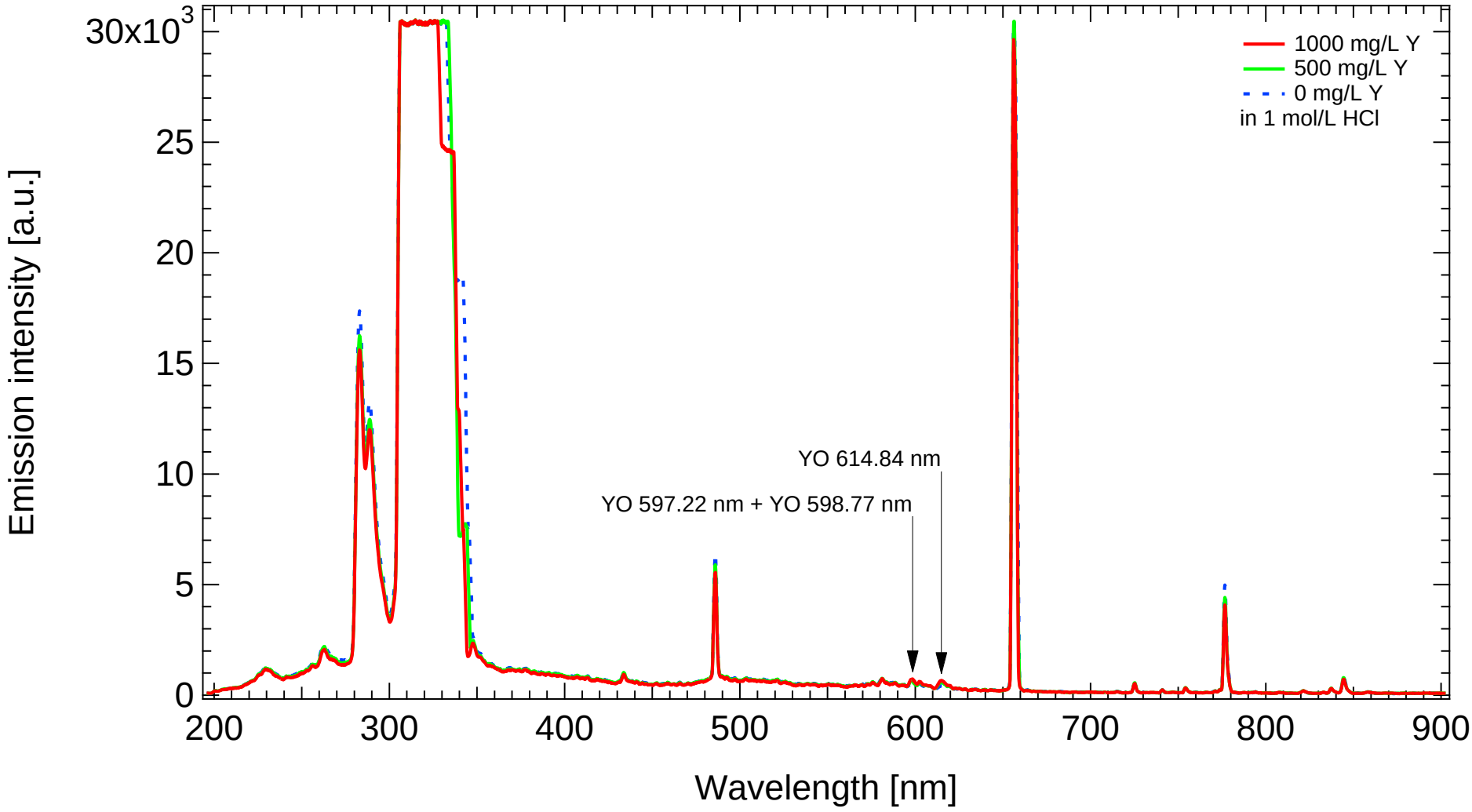
LepiCuve-C



Y

MH-5000 s2086 Conditions: 650 V, (ON: 2 ms / OFF: 60 ms) × 20 pulses

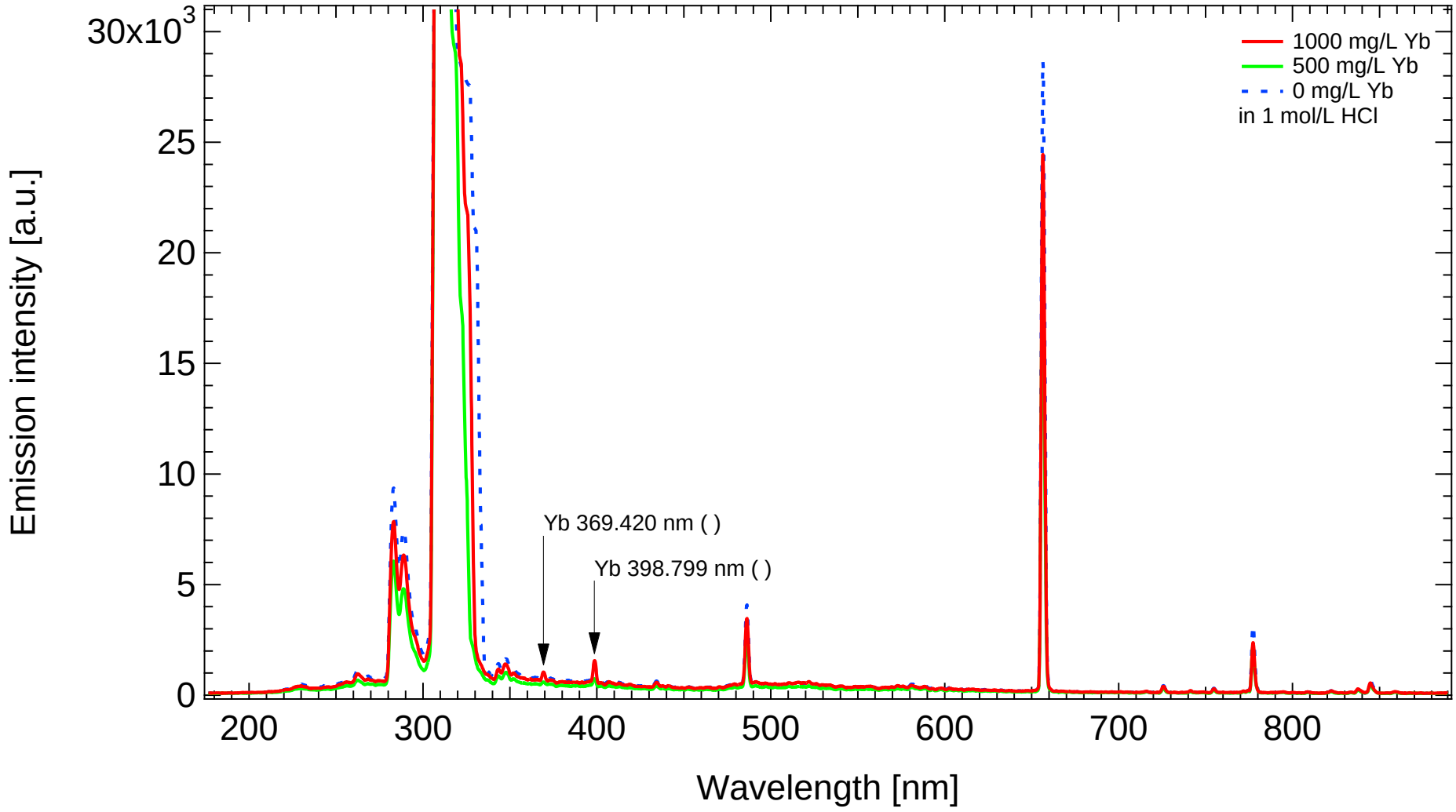
LepiCuve-C



Yb

MH-5000 s2086 Conditions: 650 V, (ON: 2 ms / OFF: 60 ms) × 20 pulses

LepiCuve-C



Zn

MH-5000 s2086 Conditions: 750 V, (ON: 2 ms / OFF: 40 ms) × 20 pulses

LepiCuve-C