

# Ettevaatust, mürgine!

## Arseeni sisaldavad renessanssköited

### Tartu Ülikooli raamatukogus

Moonika Teemus

Tiia Nurmsalu

Tartu Ülikooli raamatukogu

25. jaanuar 2023



RESEARCH ARTICLE

Open Access

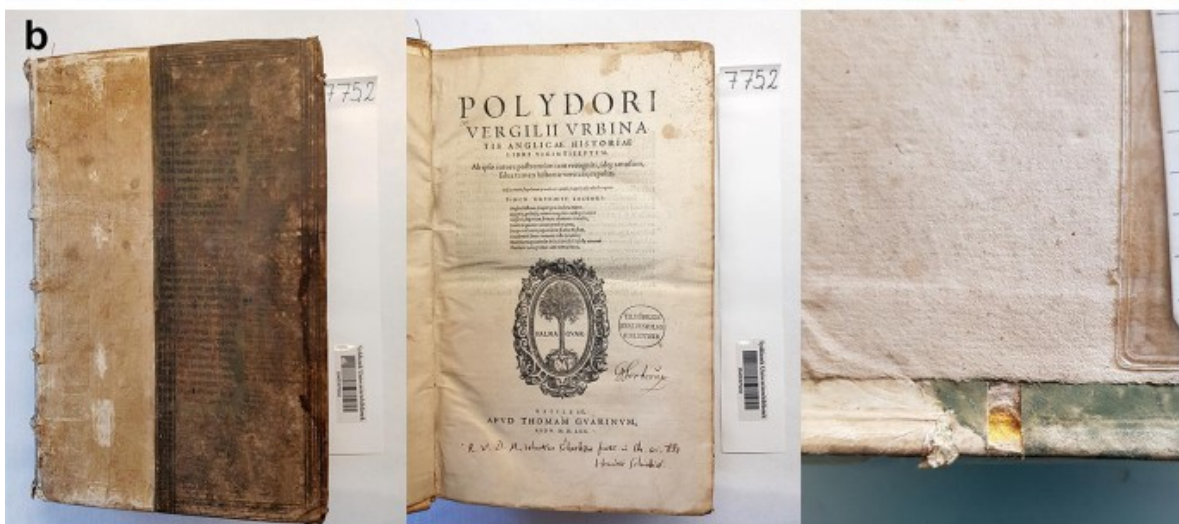
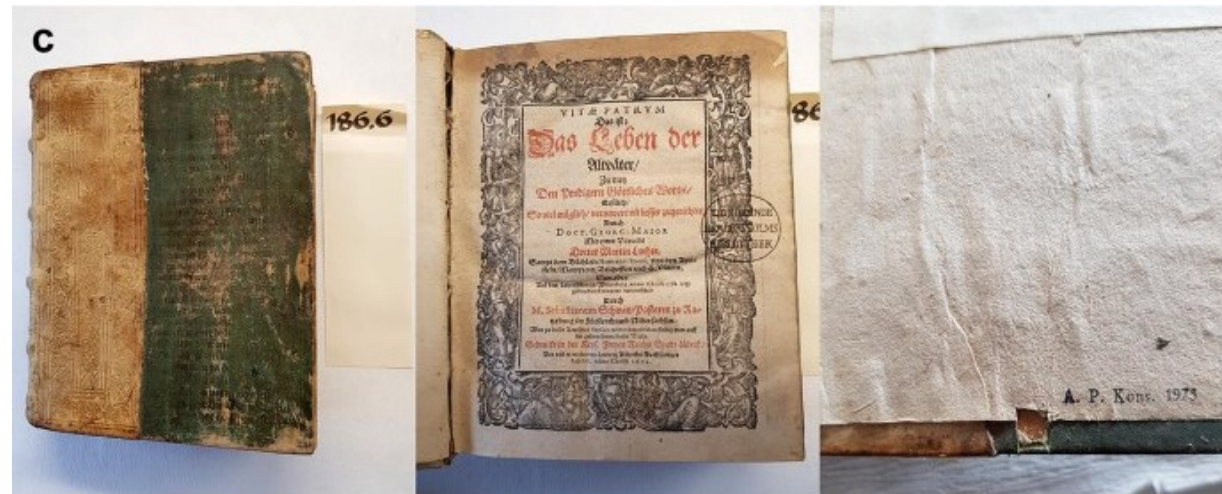
# Poisonous books: analyses of four sixteenth and seventeenth century book bindings covered with arsenic rich green paint

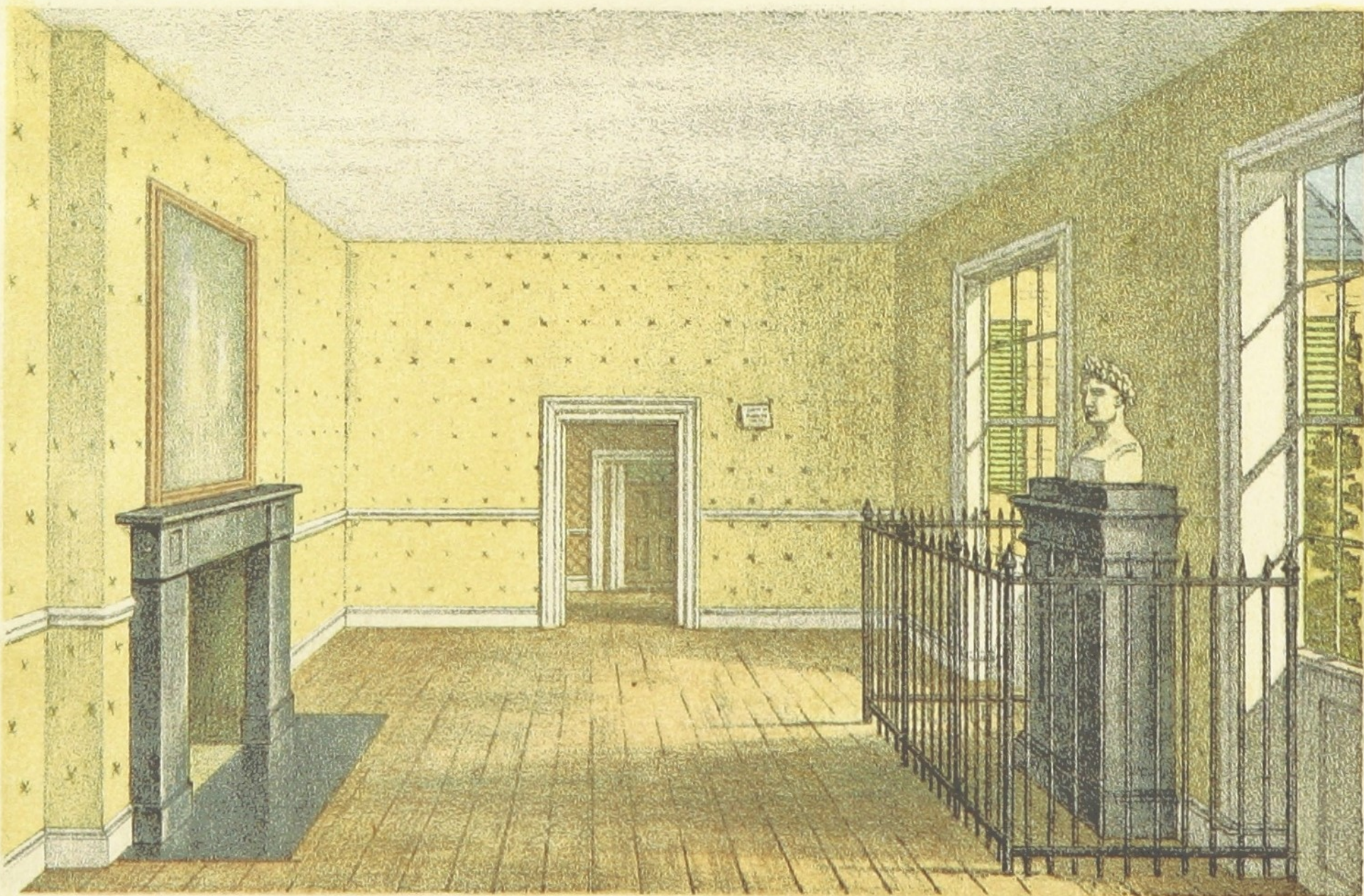


Thomas Delbey<sup>1</sup>, Jakob Povl Holck<sup>2</sup>, Bjarke Jørgensen<sup>3</sup>, Alexandra Alvis<sup>4</sup>, Vanessa Haight Smith<sup>5</sup>, Gwénaëlle M. Kavich<sup>6</sup>, Kimberly A. Harmon<sup>7</sup>, Bertil Fabricius Dorch<sup>2</sup> and Kaare Lund Rasmussen<sup>1\*</sup> 

## Abstract

Efforts to read medieval manuscript waste recycled as bookbinding material in the sixteenth and seventeenth centuries have resulted in the chemical analysis of four books housed at the University Library of Southern Denmark and the Smithsonian Libraries in Washington DC. Four green coloured book bindings have been investigated by optical microscopy, micro X-ray fluorescence, X-ray diffraction, Raman spectroscopy, mass spectroscopy, and laser ablation inductively coupled plasma mass spectrometry. The results show that the green pigments used to obscure





Vincent Brooks, Lith.

THE ROOM IN WHICH NAPOLEON DIED AT LONGWOOD.



THE ARSENIC WALTZ.

THE NEW DANCE OF DEATH. (DEDICATED TO THE GREEN WREATH AND DRESS-MONGERS.)

# Kas mäletad Scarlett O'Hara kardinatest tehtud kleiti? Tegelikult oleks see pidanud ta tapma



Linda Pärn, raamatuportali toimetaja

30. aprill 2020, 14:49



GONE WITH THE WIND (US1939)  
CLARK GABLE, VIVIEN LEIGH  
Picture from The Ronald Grant Archive



## RAAMATUD

Harry elulooraamat purustab rekordeid: esimese müügipäeva numbrid on uskumatud

## UUED RAAMATUD

VANGLAST VABADUSSE ) Venemaal vangistuses olnud korvpallurist valmis koomiks

## RAAMATUD

«Suurtest tunnetest nagu viha või kahetsus võib meile kasu olla»

## RAAMATUD

Ilmunud on uus vastsündinute kinkeraamat «Pisike puu»

## RAAMATUD

AJA MAITSED ) Ilmunud on Tallinna Linnamuuseumi uus väljaanne, Peeter I kokaraamat





## Poison Book Project

The Winterthur Poison Book Project is an ongoing investigation to explore the materiality of Victorian-era publishers' bindings, with a focus on the identification of potentially toxic pigments used as bookcloth colorants. For the most current information about the project, please monitor this wiki, which is updated regularly. Project updates are also shared on Instagram through [\[@winterthurconservation\]](#) using the hashtags [#poisonbookproject](#) and [#bibliotoxicology](#).

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Emerald green bookcloth on an 1852 imprint. Courtesy, Winterthur Library, Printed Book and Periodical Collection

### Toxic Bookcloth Colorants

Over 50% of the 19th-century, cloth-case bindings analyzed for this project to date contain lead in the bookcloth, across a range of colors. Analysis of a range of bookcloth colors has identified iron, copper, and zinc, which, while technically heavy metals by density, are generally considered not to be toxic. Analysis has also identified the following

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Smaragdroheline  
(Pariisi roheline,  
Viini roheline)



Scheele roheline

(vaskarseniit)







**Auripigment**



**Vergaut**



1



#

# ARISTOTELIS

De Cælo lib. IIII.  
 De Ortu & interitu II.  
 Meteorologicorum IIII.  
 De Mundo I.  
 Parua (ut vocant) naturalia.

319.  
320.

*Græcè & Latinè.*

*IVL. PACIVS VTRVNQVE CON-  
 textum recensuit, in tractatus & capita distin-  
 xit, diagrammaticis, & perpetuis notis  
 illustravit.*

## ACCESSIT TRIPLEX INDEX.

- I. Librorum, tractatum, & capitum.
- II. Græcorum verborum.
- III. Rerum memorabilium.



FRANCOFVRTI  
 Typis Wecheliani apud Claudium Mar-  
 nium, & hæredes Ioannis Aubrii.

M. D C I.

*Cum Gratia & privileg. S. Cæs. Maest. ad sexennium.*

*Ch. Abr. Joh. Kell Ræstel  
 h. 1741*

#

R II d 939 [konvoluut]

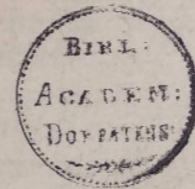
2

RGL

1581

MATTHÆI VVESENBECHII  
**COMMENTA-**  
**RIVS IN INSTI-**  
**TVTIONVM IVRIS LI-**  
 bros IIII.

*Accesit INDEX Rerum & Verbo-*  
*rum locupletissimus.*



*Cum gratia & priuilegio Cesareo & Regio.*

BASILEÆ,  
 per Eusebium Episcopium, & Nicolai fr. hæ-  
 redes, M. D. LXXVI.

*Ruinhard*  
*1581*  
*H*  
*14*  
*10.*

R IV Mb 113



HVGONIS  
**DONELLI**  
 IVRISCONSULTI

**OPERA PRIORA, EDITA IAM OLIM;**  
 nunc recens recognita & repurgata ab auctore,  
 nec paucis accessionibus & au-  
 ctiora, & meliora  
 facta.

**OPERA HÆC SVNT,**  
*quæ sequuntur:*

*De usuris.*

*De fructibus.*

*De mora.*

*De pignoribus.*

*De adilicio edicto.*

*De evictionibus & duple  
 stipulatione.*

*De probationibus.*

*De sive instrumentorum.*

*De testibus.*

**Cum INDICE rerum & verborum locupletissimo.**

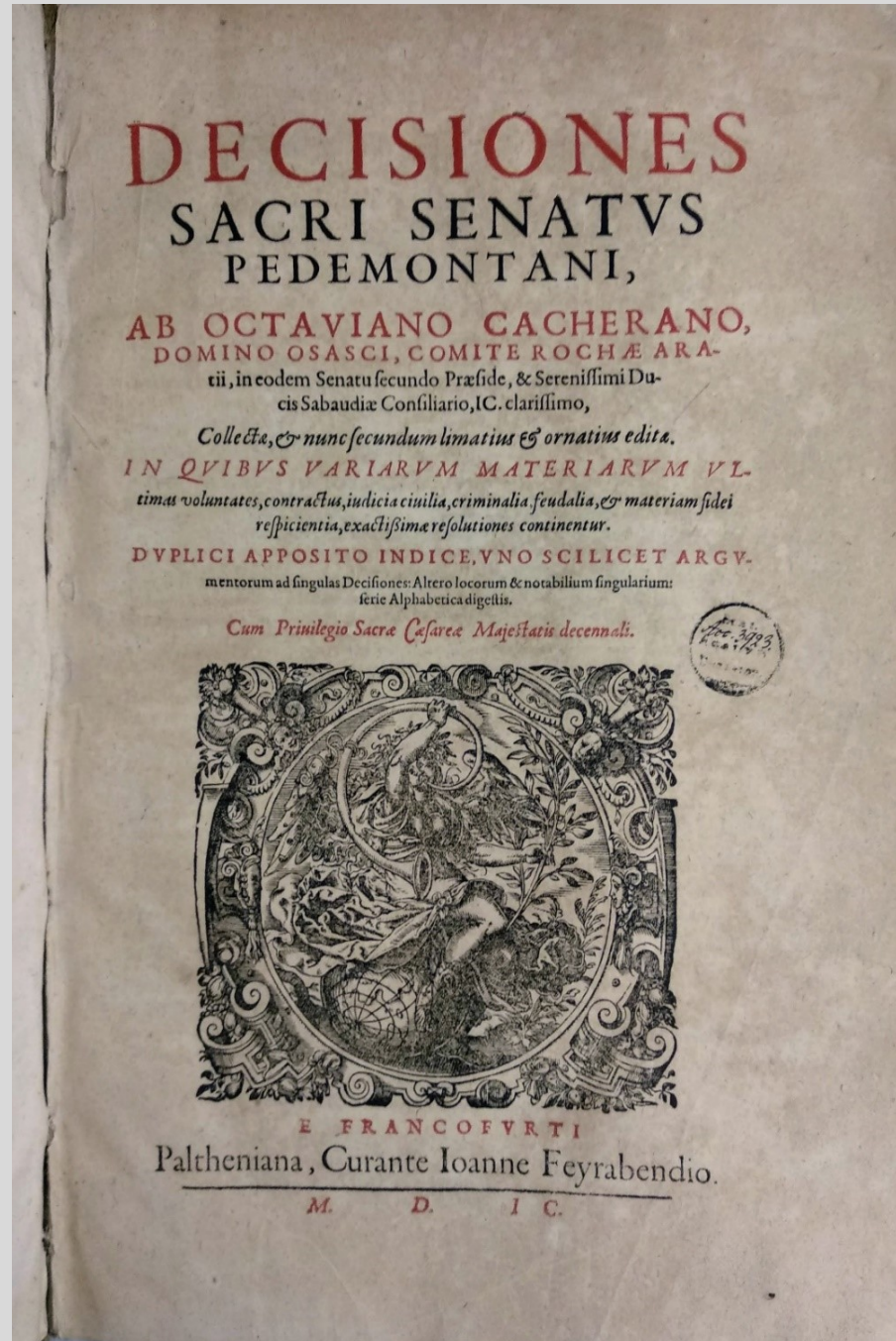


M. D.

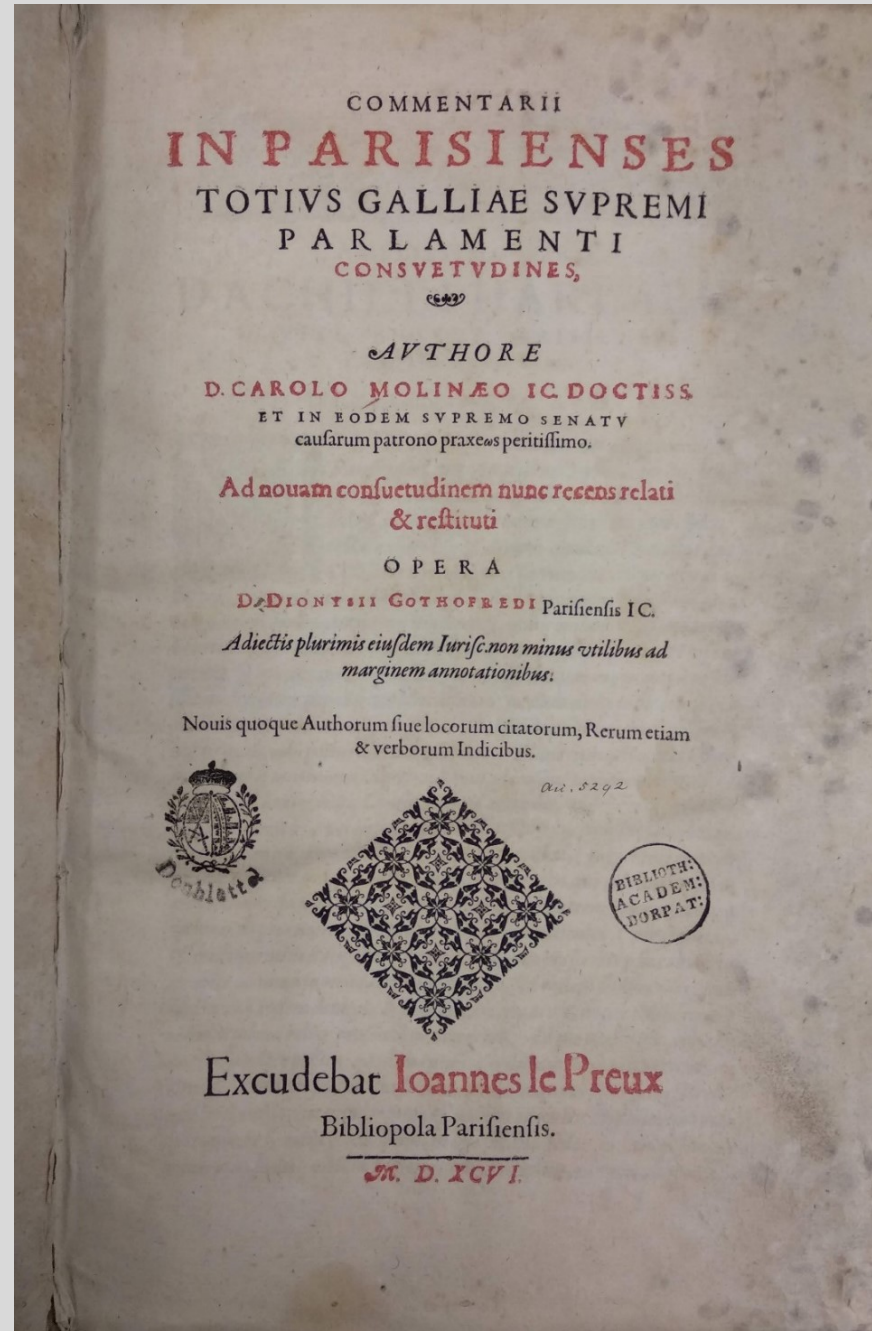
LXXXIX.

**FRANCOFVRTI AD MOENVM,**  
 Apud Martinum Lechlerum, impensis Sigismundi Feyerabendii.

4



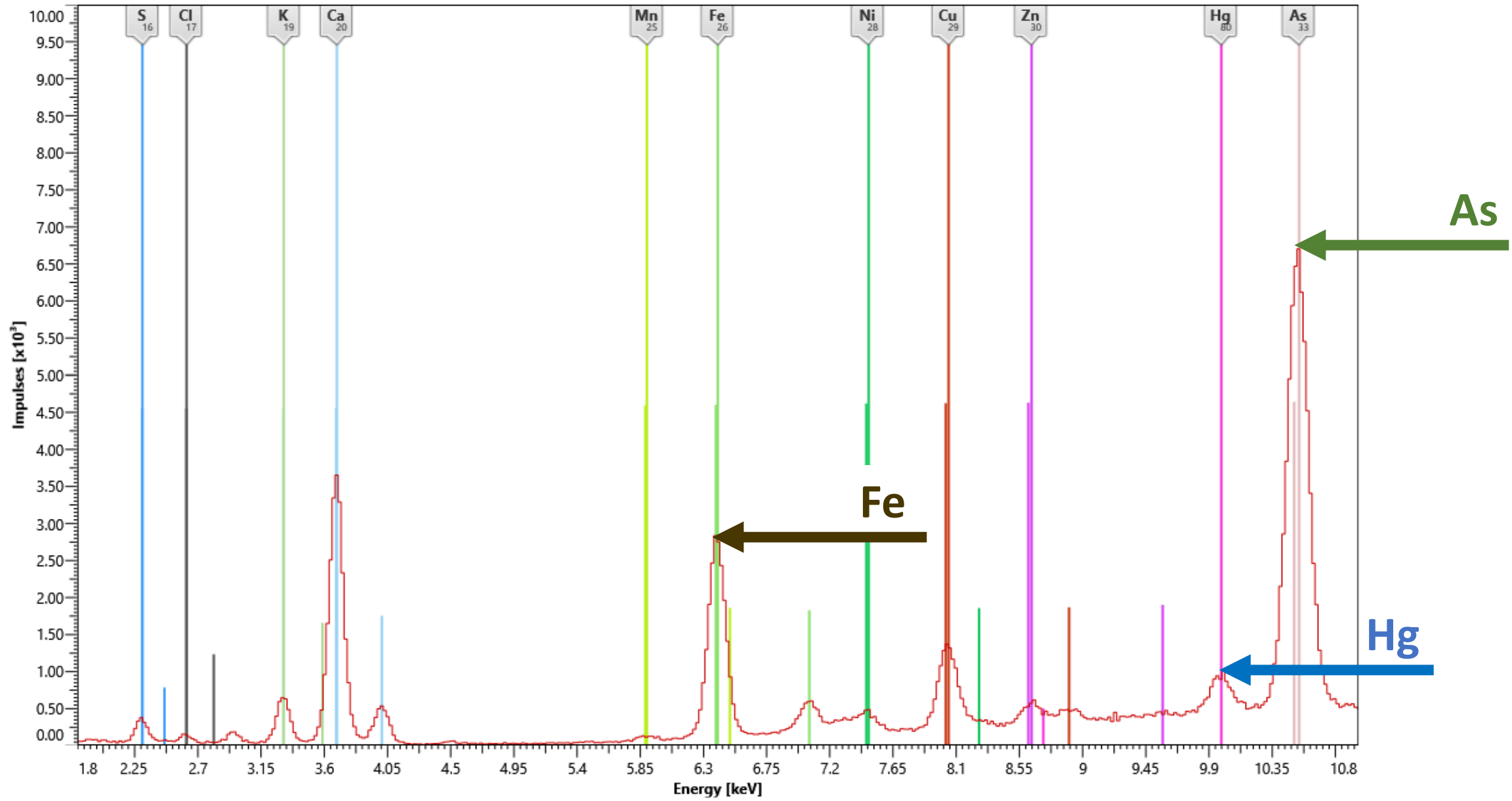
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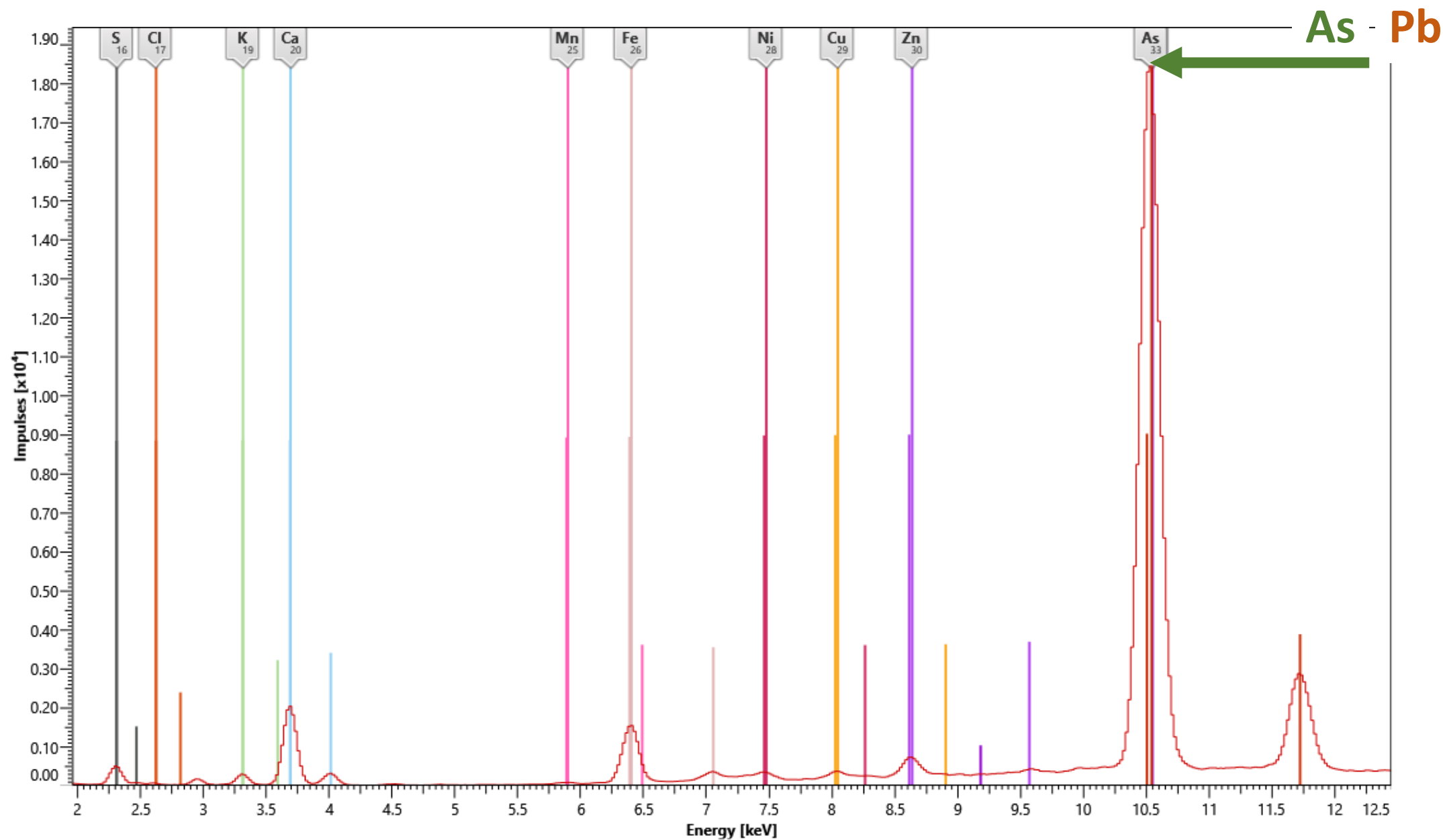




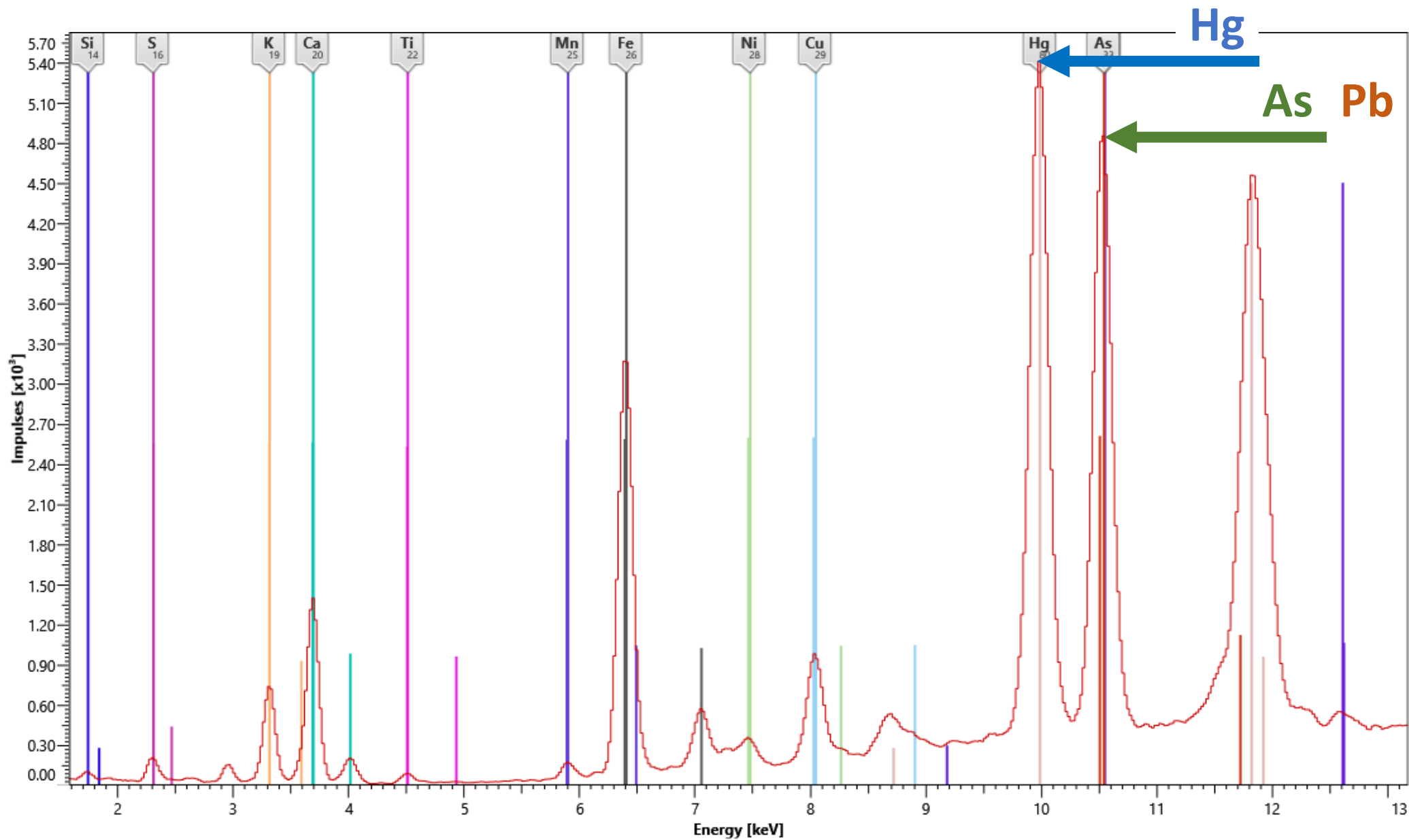
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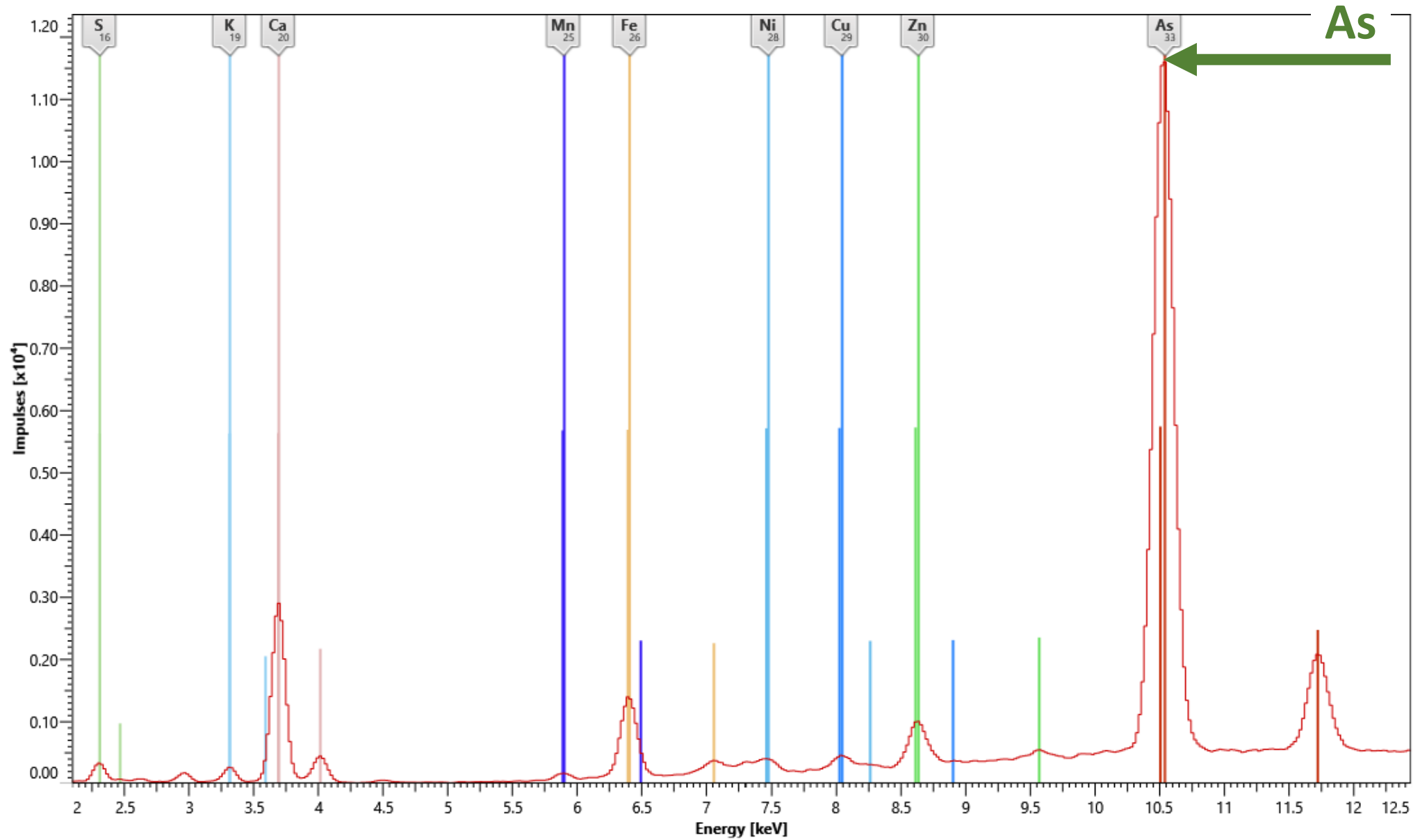
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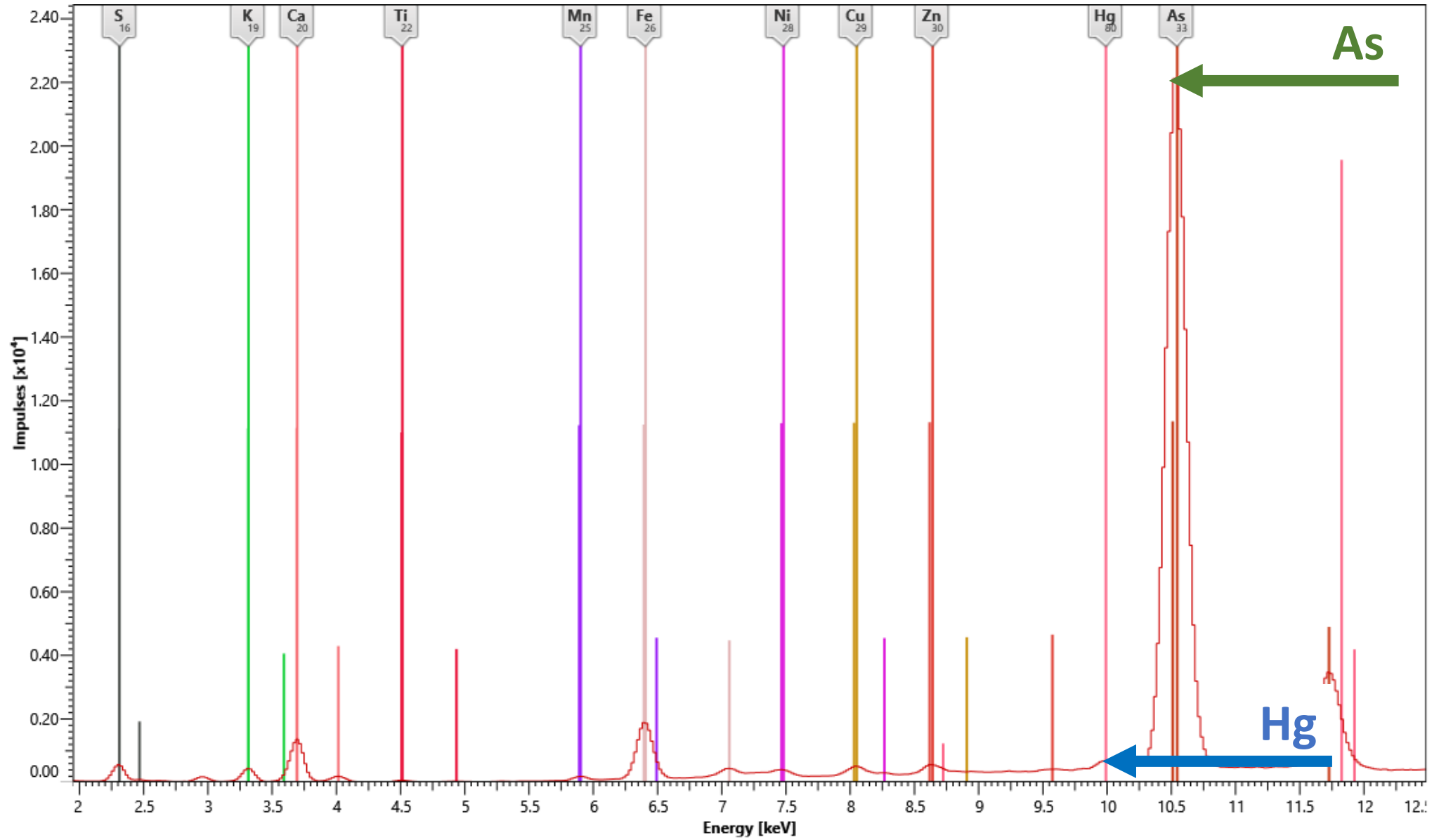
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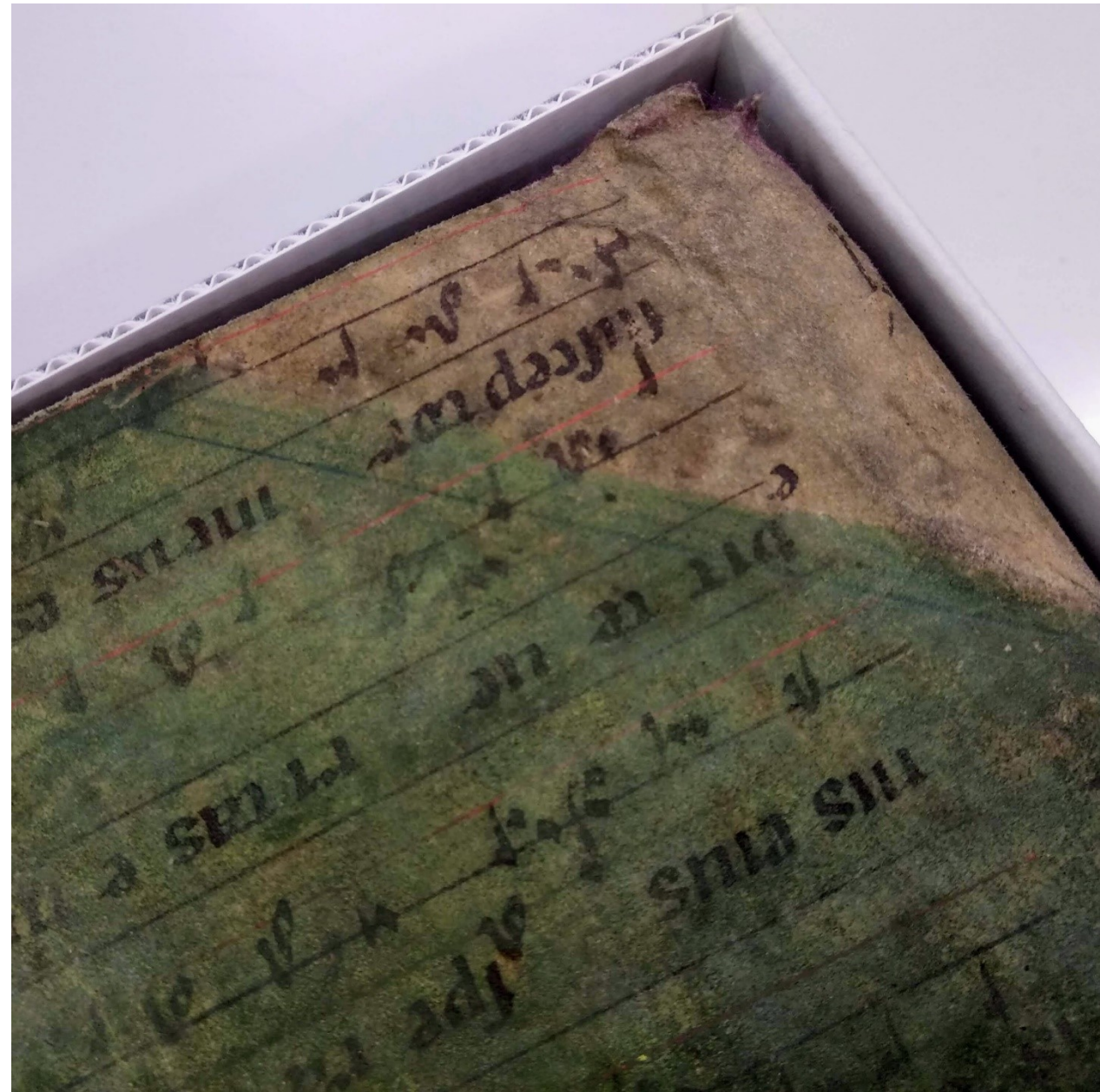
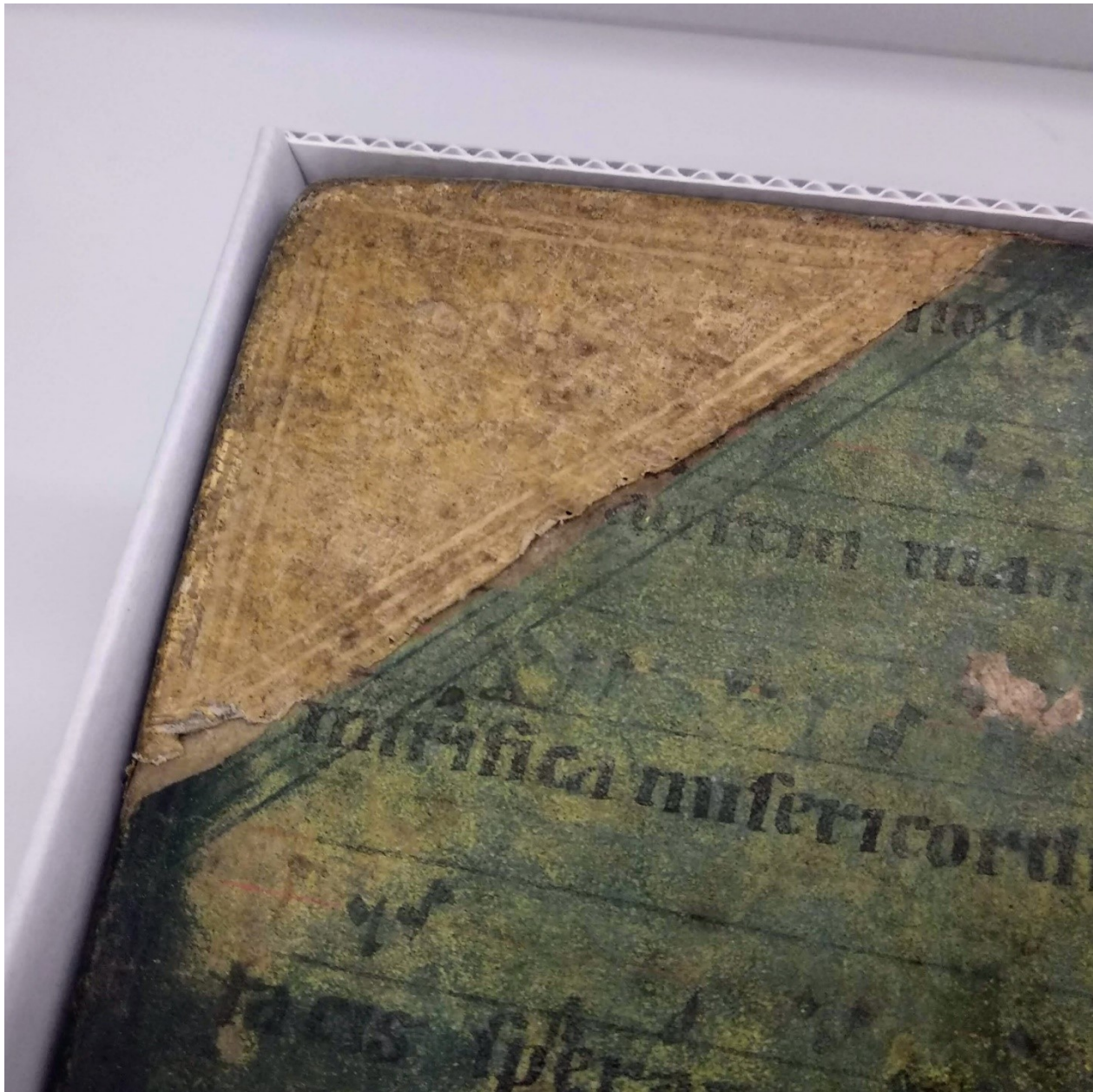


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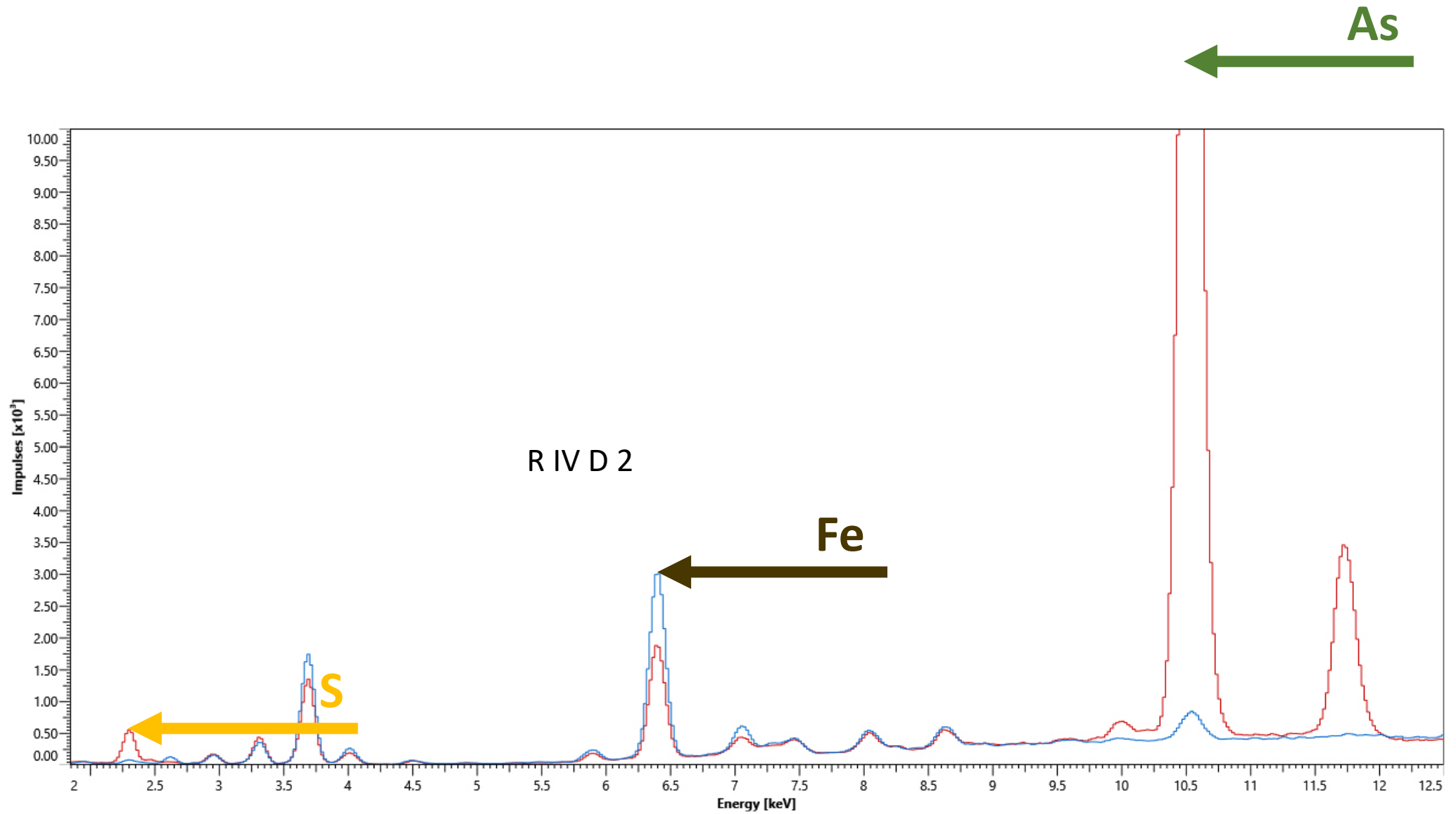


5





5



Punane joon – rohelise värviga kaetud osa (sh  $As_2S_3$ )

Sinine joon – tint värviga katmata osalt (sh raudgallustint)

1

Mustirullid:

1. kandelaaber
2. kettmuster



Mustrirullid:

1. laineline  
viinapuuväät
2. kettmuster



# 4

## Mustrirullid:

1. medaljonid nelja reformaatori – Jan Husi, Martin Lutheri, Rotterdami Erasmuse ja Philipp Melanchthoni – peadega, taimeornament ja keerubid
2. palmetivööt

**MELANCHTHON**

**HUS**

**LUTHER**

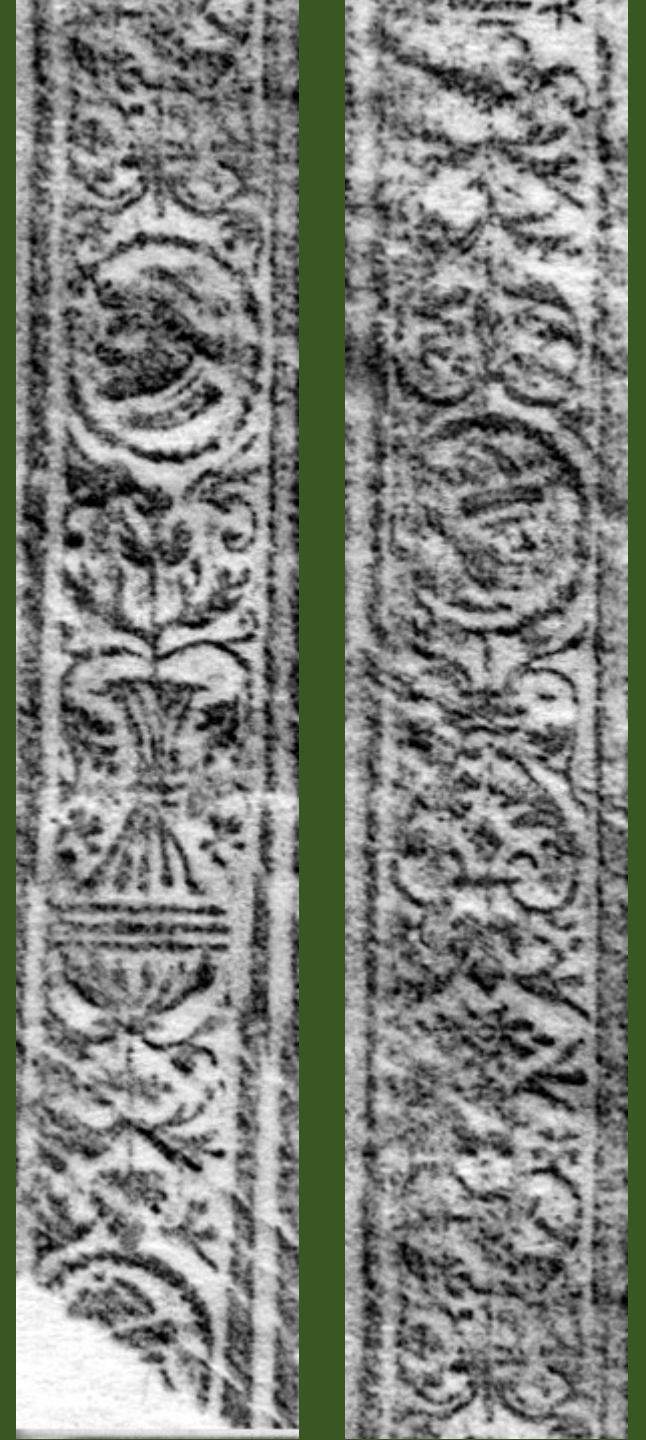
**ERASMUS**



5

Mustirullid:

1. medaljonid  
nelja pea,  
vaaside ja  
keerubitega.
2. palmetivööt



2

Mustirull  
nelja  
putoga,  
sisse  
pressitud  
daatum  
1581.



*Einbanddatenbank*  
([hist-einband.de](http://hist-einband.de)) >

**Lazarus Led(d)erhose**  
köitekoda [Wittenbergis](#).

(Sündinud Wrocławis,  
surnud arvatavasti 1593.)

# Kasutamine


- Võimalusel pakkuda kasutamiseks digikooptiat.
- Kanda nitriilkindaid.
- Pärast kasutamist pesta käed.
- Asetada ainult siledale pinnale, mida on võimalik pärast puhtaks pühkida (s.t „ei“ pehmetele tugedele ja raamatupatjadele).



# Hoiustamine

- Eraldada teistest raamatutest, s.t panna karpidesse ja/või polüetüleenist minigrip kilekottidesse.
- Märgistada ümbrised hoiatussiltidega.



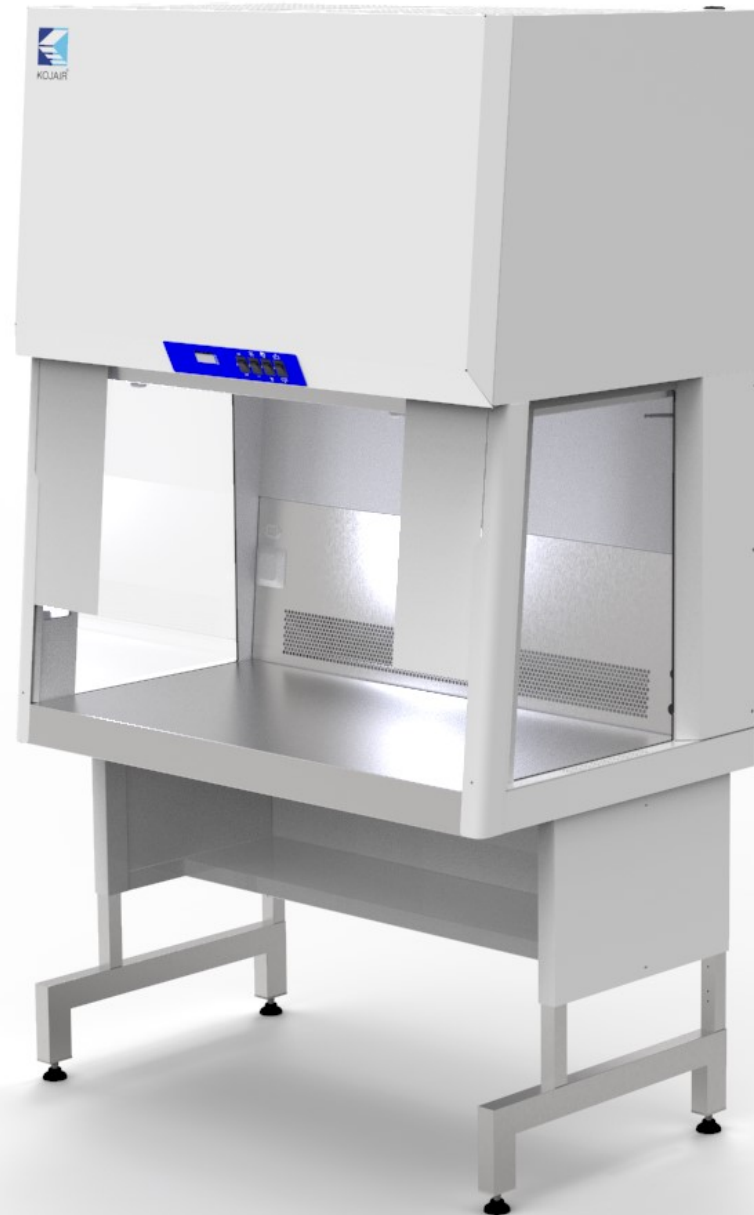
As 

Kasuta kindaid  
Wear gloves



# Konserveerimine ja puhastamine

- Isikukaitsevahendid.
- Spetsiaalne tõmbekapp (väljatõmbega / HEPA filtriga).
- Kui kappi ei ole, kasutada kindlasti respiraatorit.



# Kuidas edasi?

- Teadvustamine ja teavitamine.
- Rariteetide kogus kokku u 20 analoogset poolnahkköites 16. saj lõpu ja 17. saj alguse raamatut, mille kaantel üks osa on värvitud (rohelisest mustani) – analüüsime kõik ja karbistame/märgistame.
- 19. sajandi köited, kus köitematerjalina on kasutatud rohelist kalinguri, paberit, pappi jm???

## A History of Gardening in England



Täname!

TÜ arheoloogialabor &  
Ragnar Saage

Dorel Sabre  
Kadri Tammur  
Kaspar Kolk