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SURFACE PHYSICS APPROACH TO PREBIOTIC MOLECULAR AGGREGATION ON MINERAL SUBSTRATES

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SURFACE PHYSICS APPROACH TO PREBIOTIC MOLECULAR AGGREGATION ON MINERAL SUBSTRATES

. . . FOCUSING ON THE EARLIEST STAGES . . .

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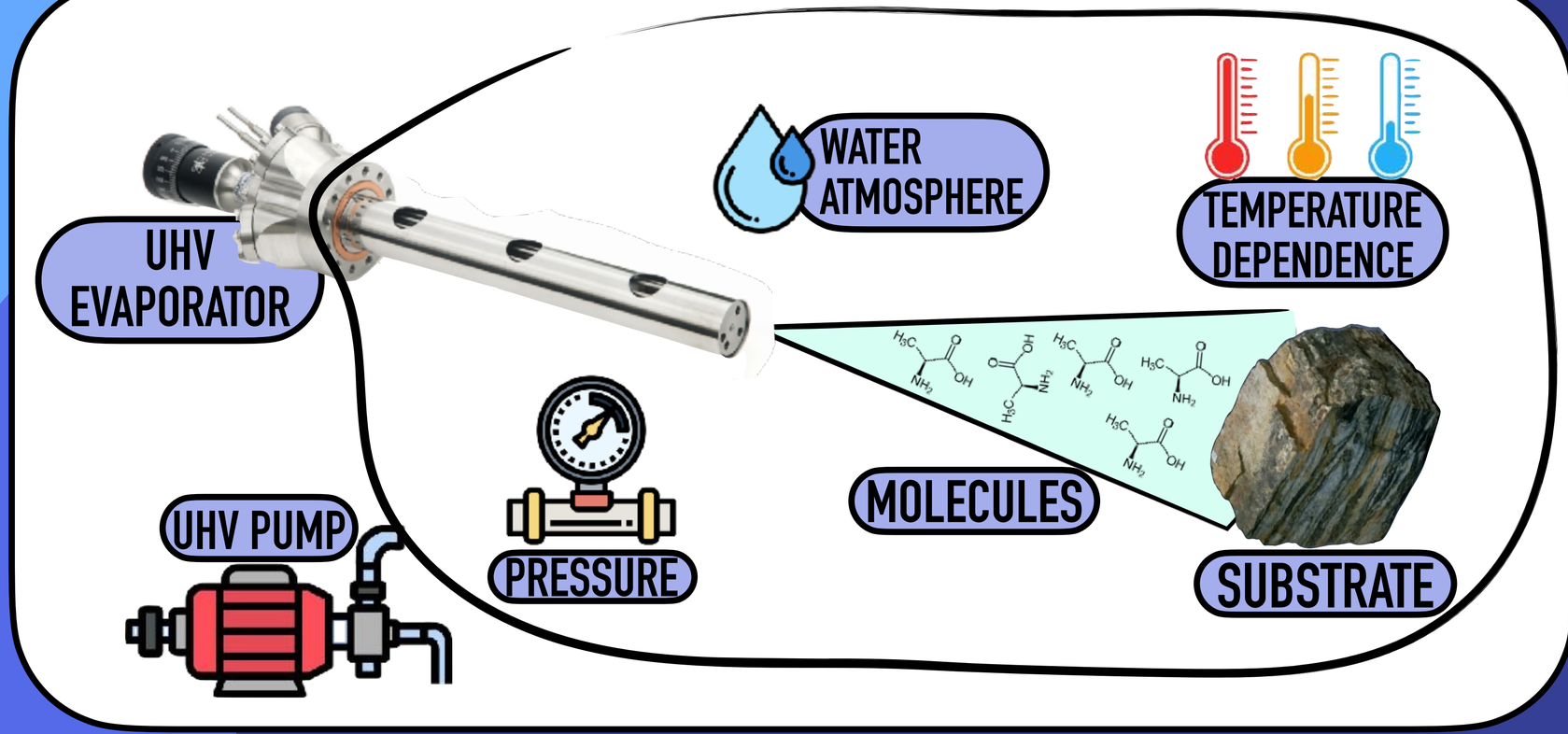
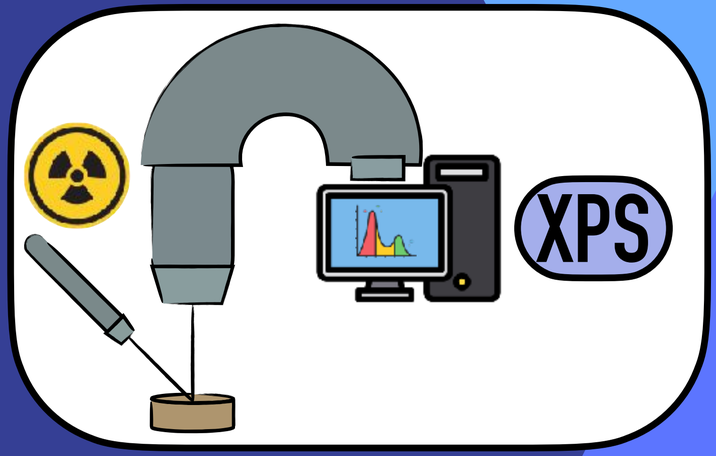
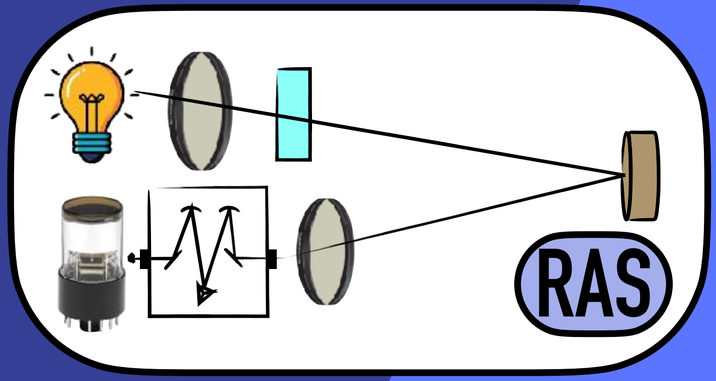
THE ORIGINAL AIM OF MY PROJECT



EXPERIMENTAL TECHNIQUES





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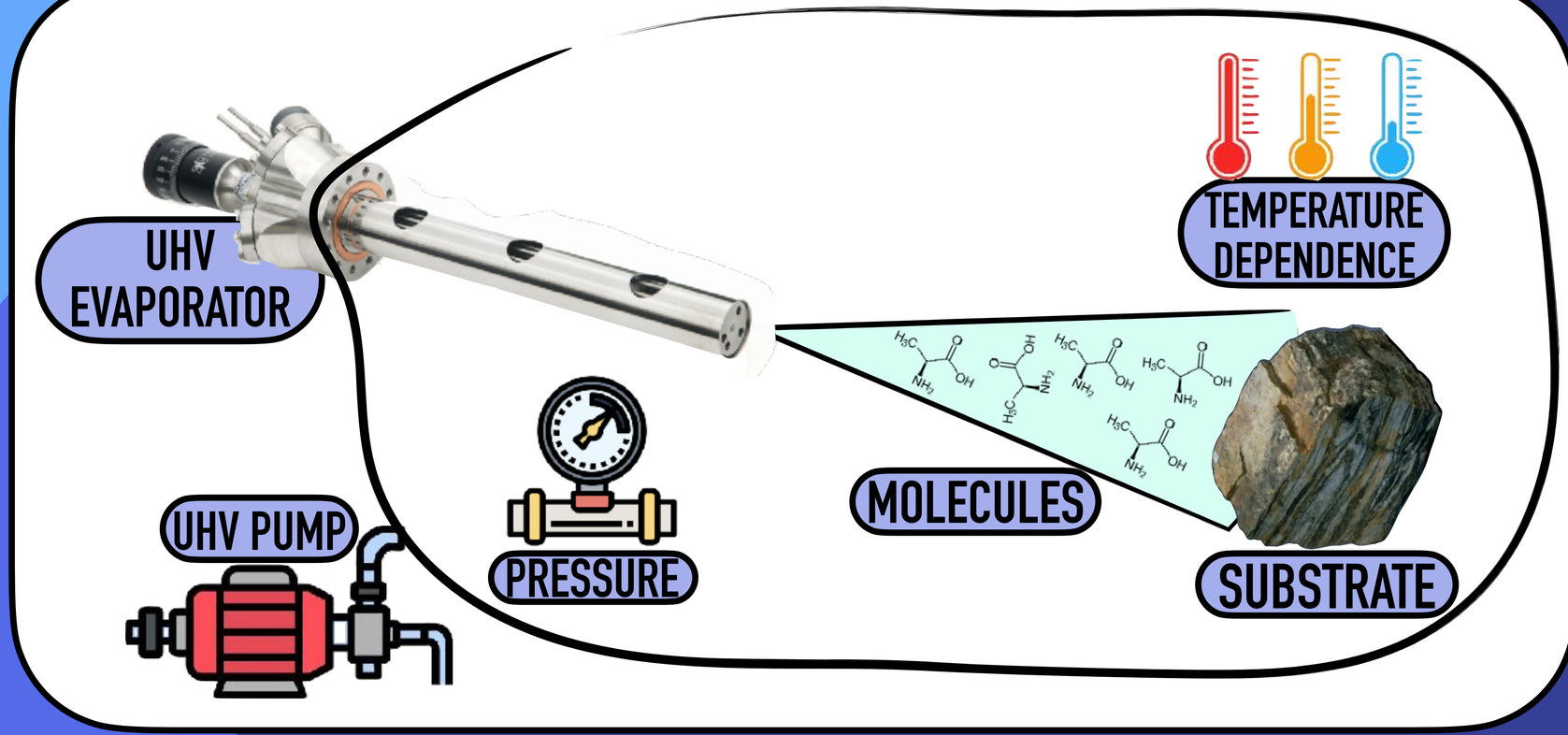

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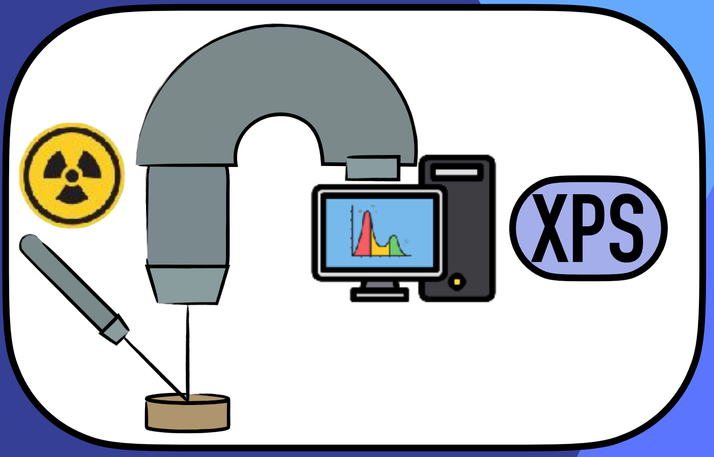

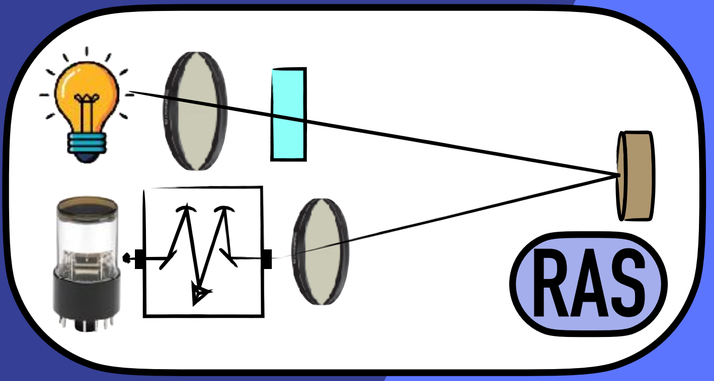

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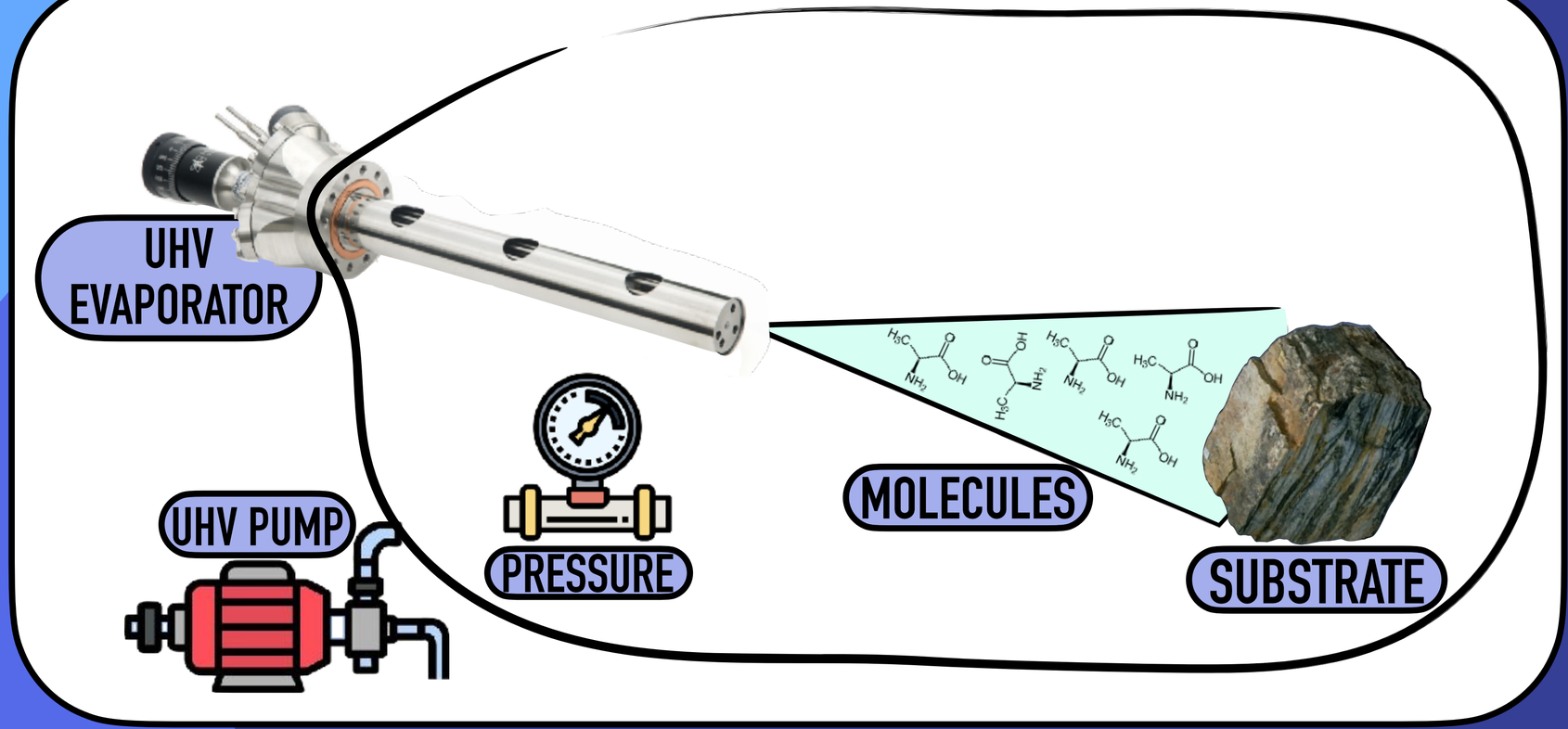

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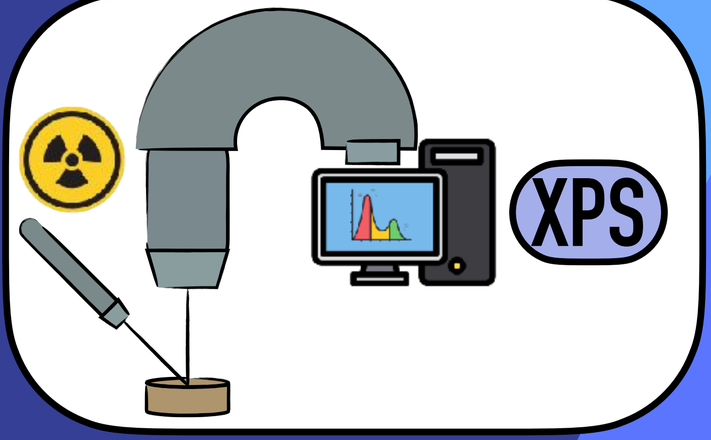

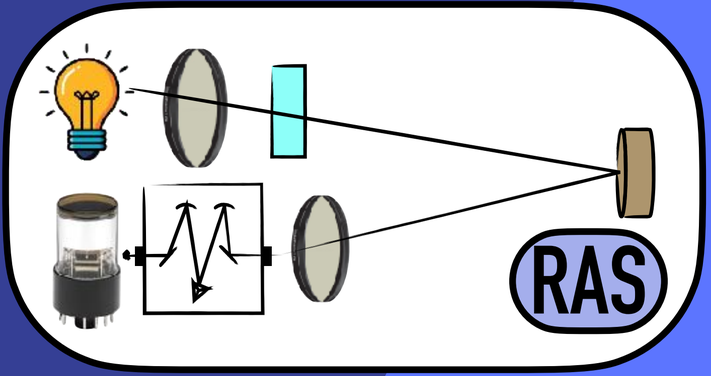

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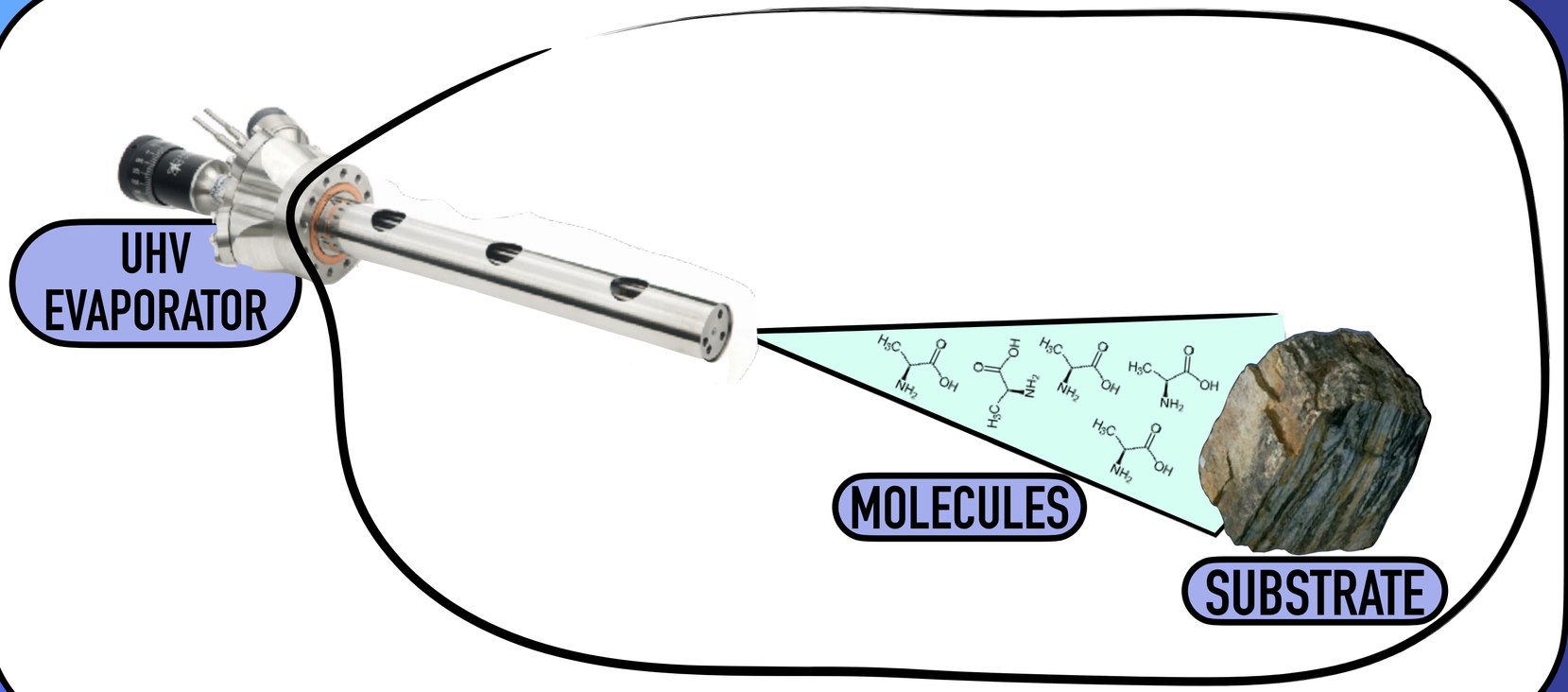

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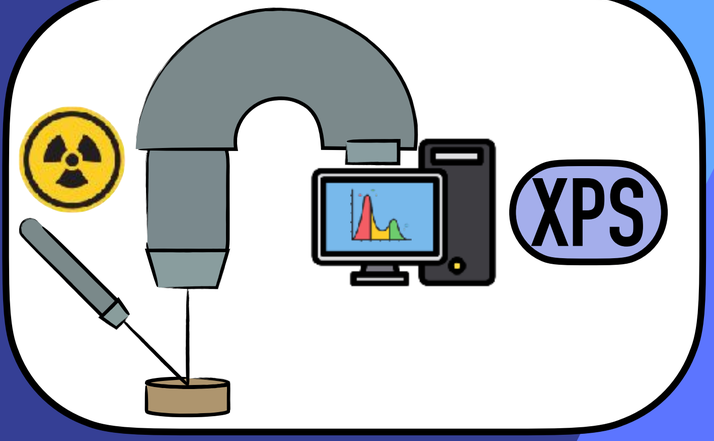

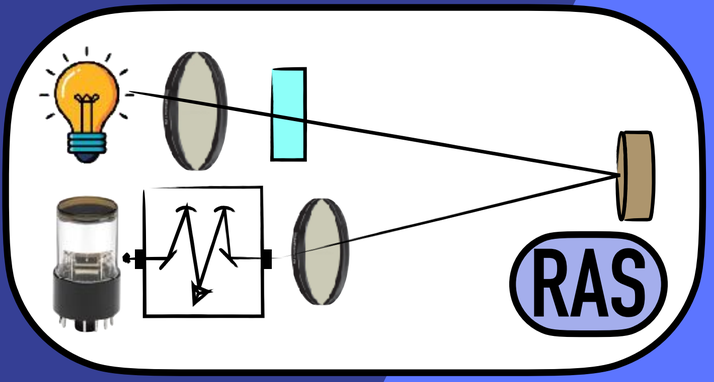

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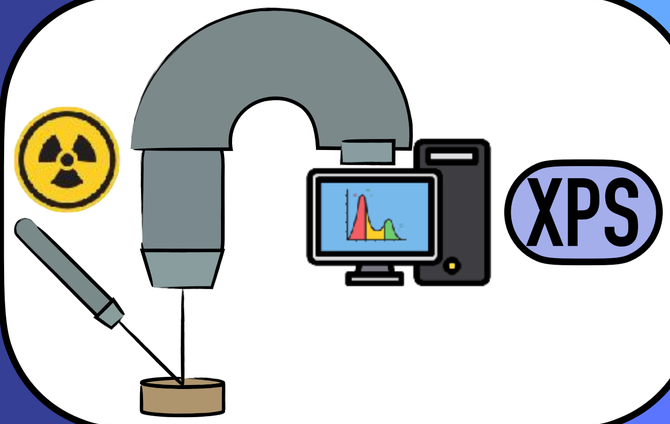
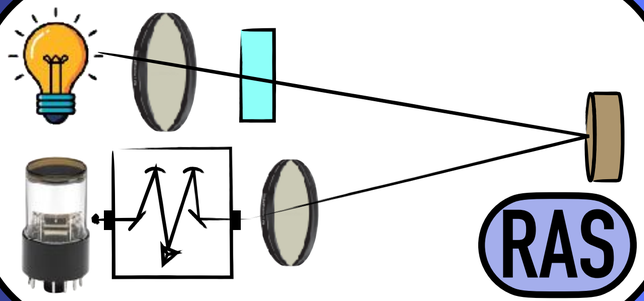
THE ORIGINAL AIM OF MY PROJECT

SUBSTRATE

EXPERIMENTAL TECHNIQUES





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LET'S BEGIN WITH SOMETHING "SIMPLE"

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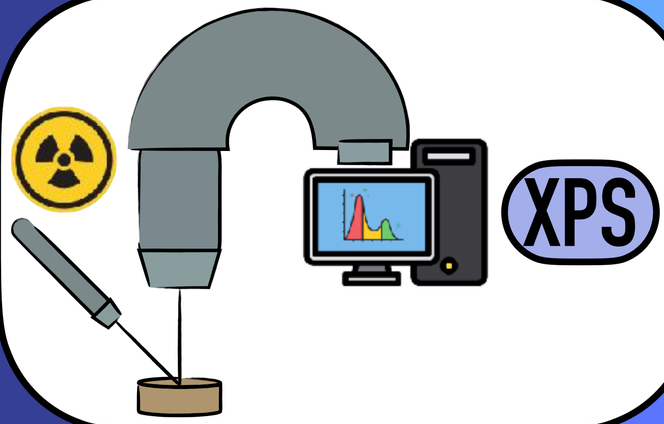

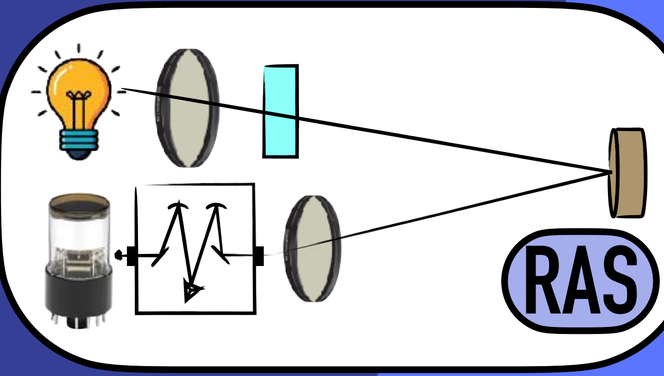

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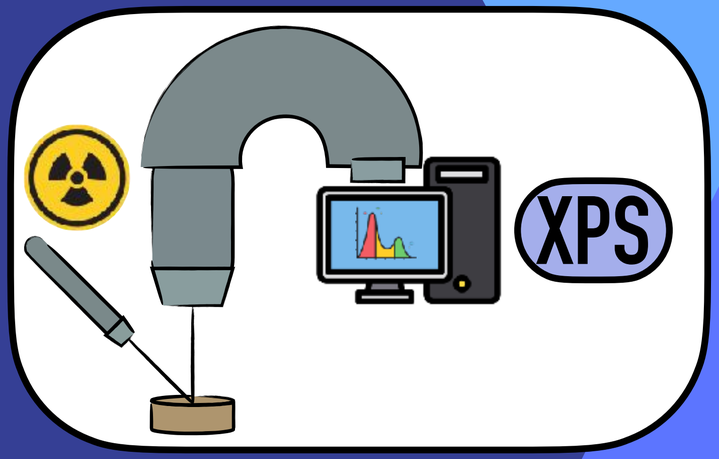

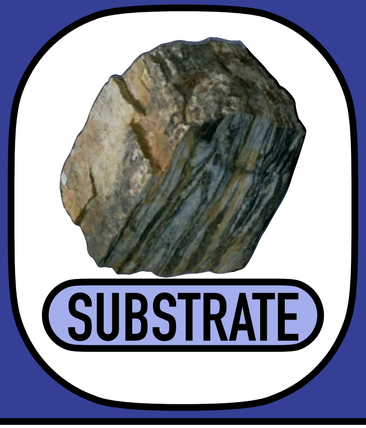

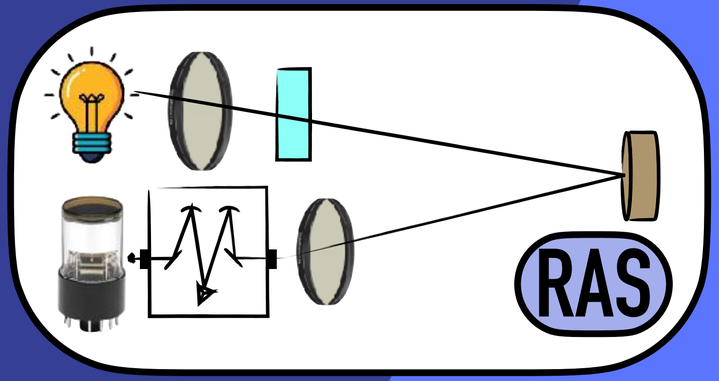

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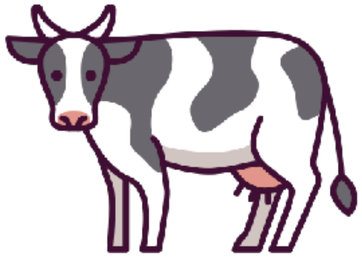

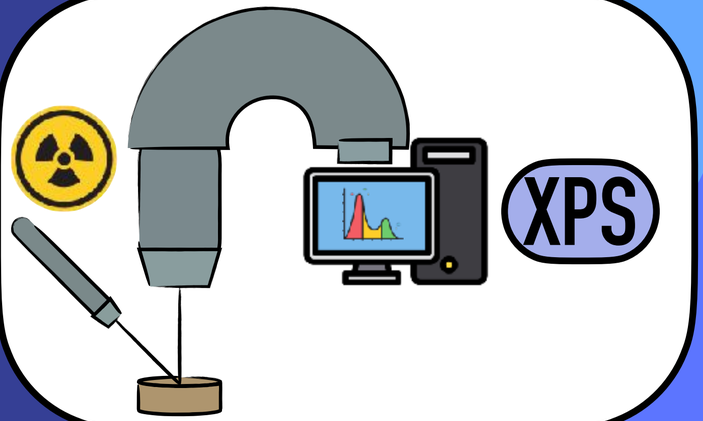

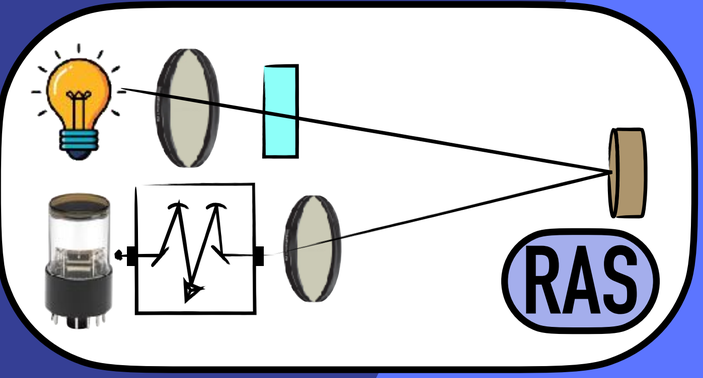

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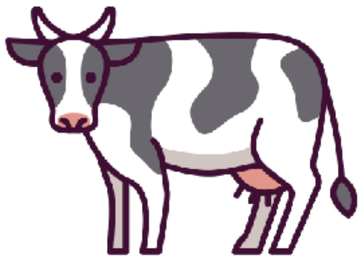

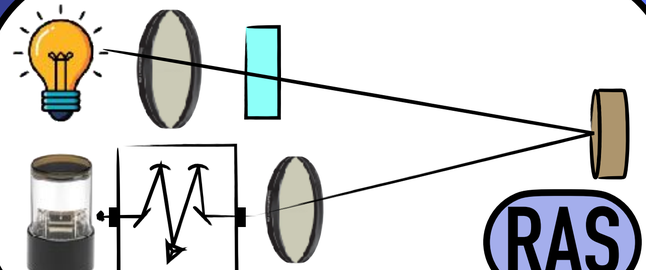

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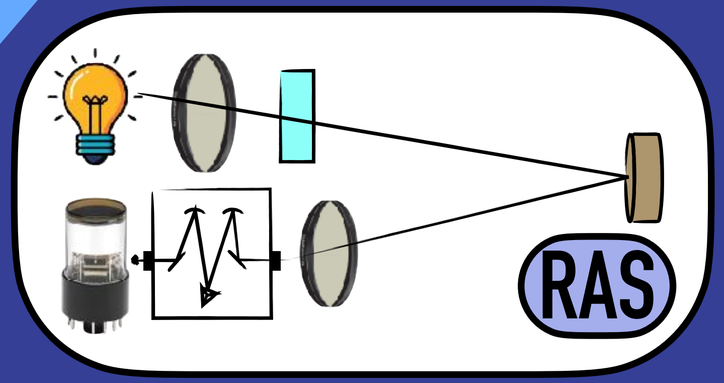

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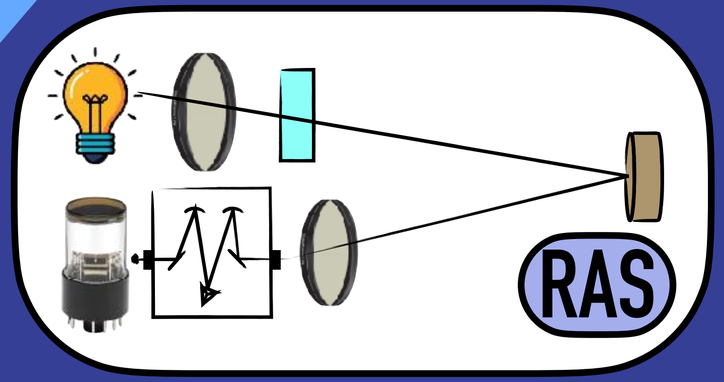

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HOW TO BEGIN?

CLAY MINERALS, OXIDES (QUARTZ & TiO_2), CALCITES

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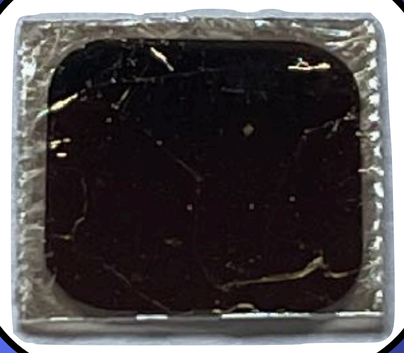
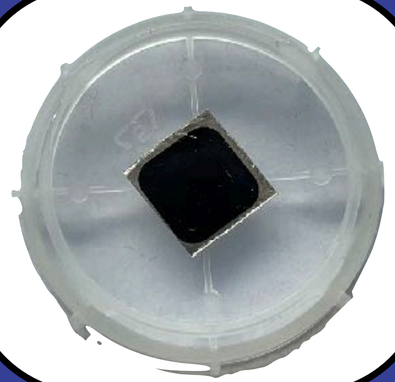
HOW TO BEGIN? LAYERED MATERIALS $Ge_2Sb_2Te_5$

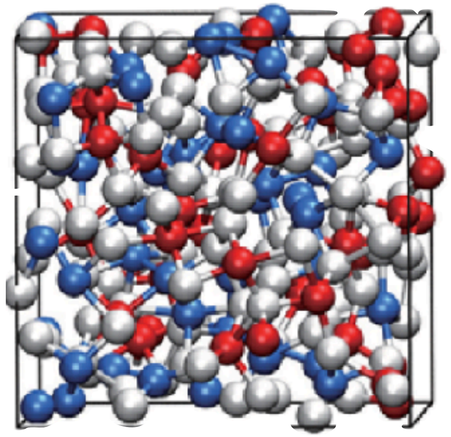
THE GROUP LED BY PROF. FABRIZIO ARCIPRETE WAS WORKING ON PHASE CHANGE MATERIALS

ORDERED CUBIC (111) OUT OF PLANE ORIENTATION 21NM GST FILM GROWN ON MICA SUBSTRATE

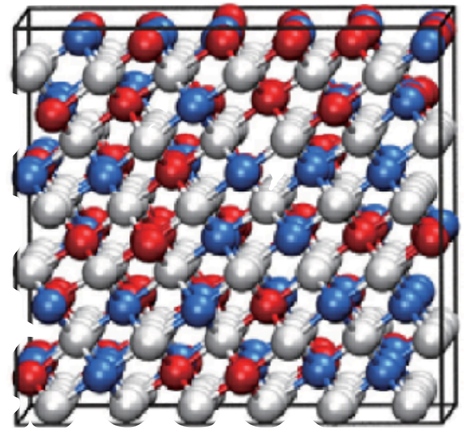




AMORPHUS $Ge_2Sb_2Te_5$



CRYSTALLINE $Ge_2Sb_2Te_5$



RED, BLUE AND WHITE SPHERES REPRESENT Ge, Sb, Te

ZHOU, W., SHEN, X., YANG, X., WANG, J., & ZHANG, W. (2024). FABRICATION AND INTEGRATION OF PHOTONIC DEVICES FOR PHASE-CHANGE MEMORY AND NEUROMORPHIC COMPUTING. INTERNATIONAL JOURNAL OF EXTREME MANUFACTURING, 6(2), 022001.

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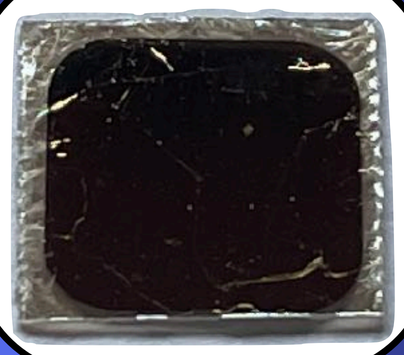
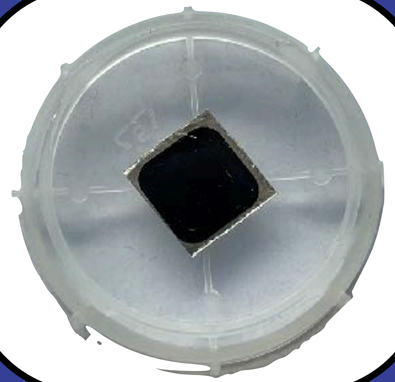
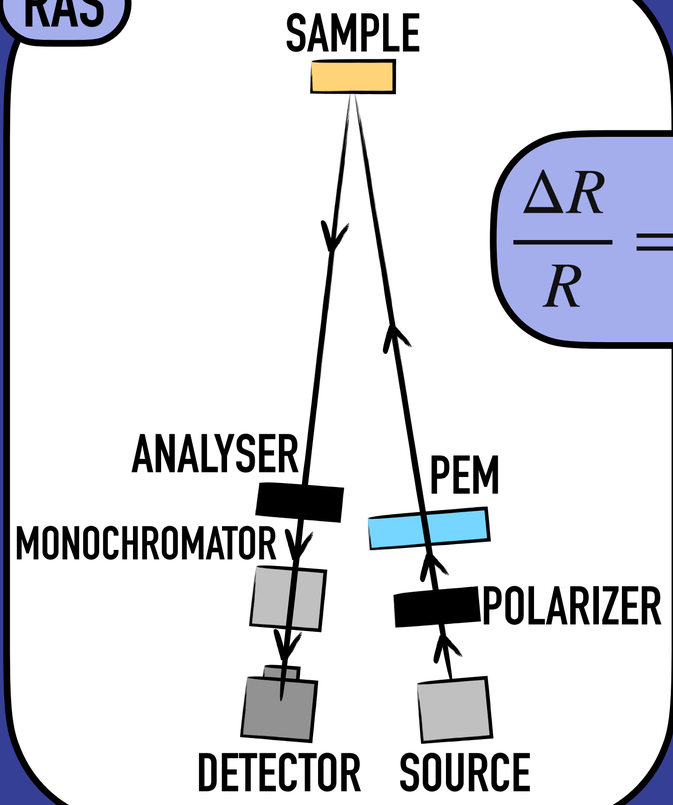




RAS



$$\frac{\Delta R}{R} = 2\frac{R_\alpha - R_\beta}{R_\alpha + R_\beta}$$

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HOW TO BEGIN? CHECK FOR THE LITERATURE

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Cite This: ACS Nano 2018, 12, 8798−8807
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ARTICLE

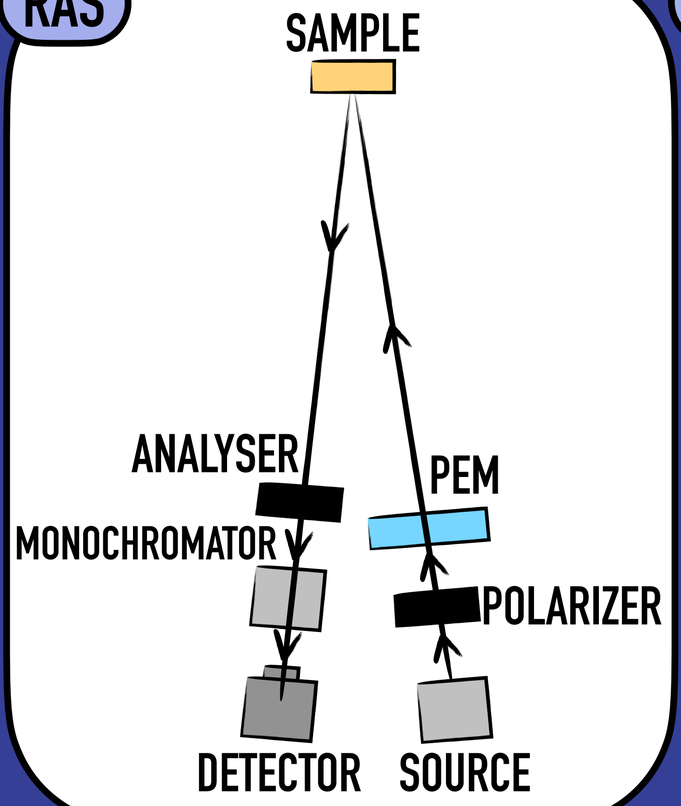
In-Plane Optical Anisotropy and Linear Dichroism in Low-Symmetry Layered TlSe

Shengxue Yang,[†,#] Chunguang Hu,[‡,#] Minghui Wu,[§,#] Wanfu Shen,[‡,#] Sefaattin Tongay,[∥] Kedi Wu,[∥] Bin Wei,[⊥] Zhaoyang Sun,[†] Chengbao Jiang,[*,†] Li Huang,[*,§] and Zhongchang Wang[*,⊥]

ADRDM

AZIMUTH-DEPENDENT REFLECTANCE DIFFERENCE MICROSCOPY

RAS



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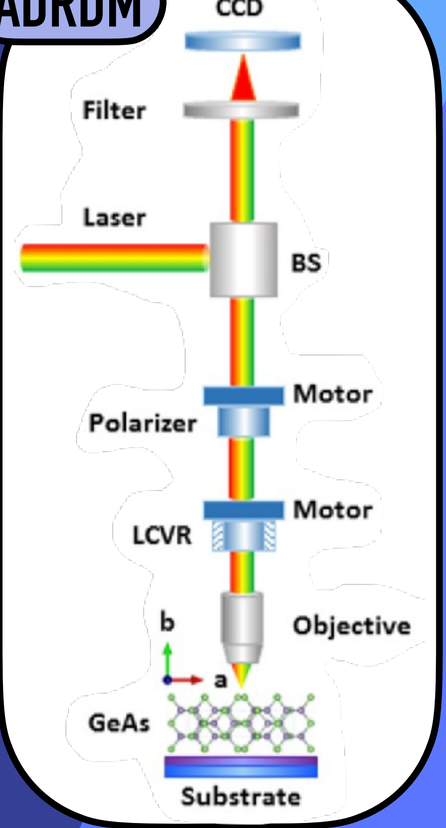

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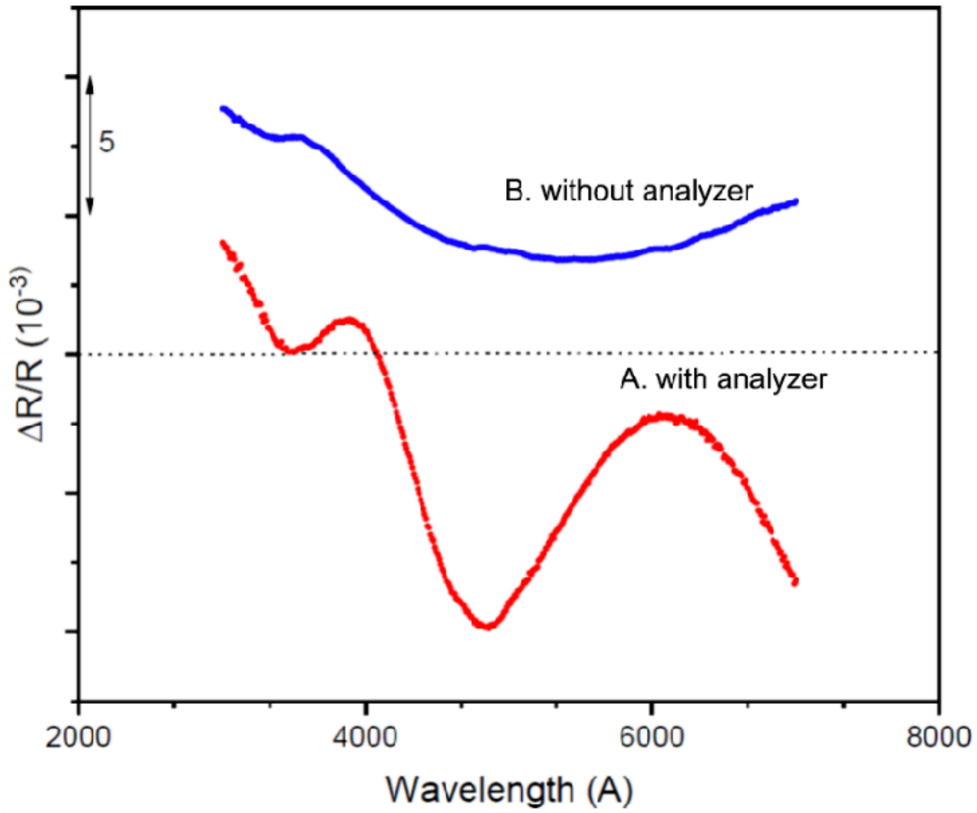
RAS WITH AND WITHOUT THE ANALYSER



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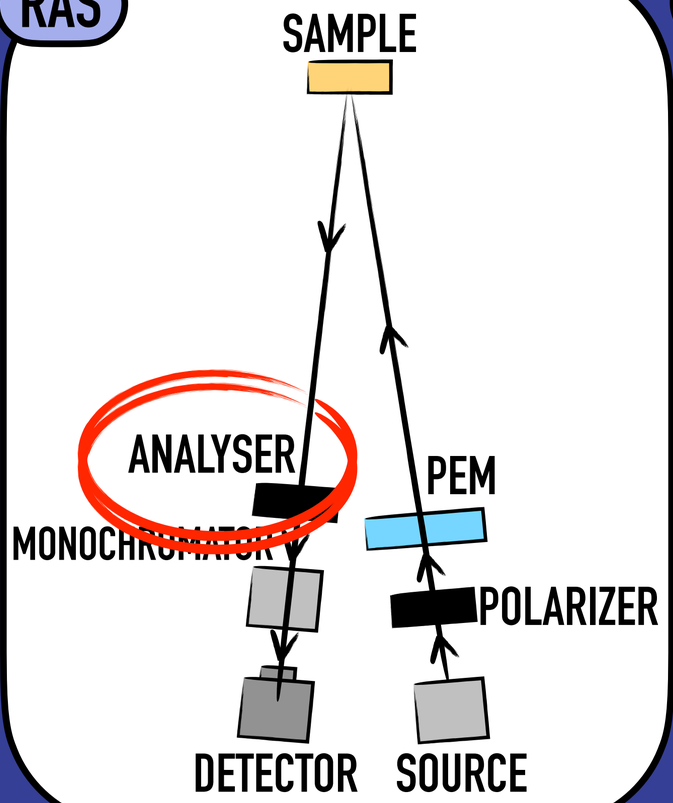

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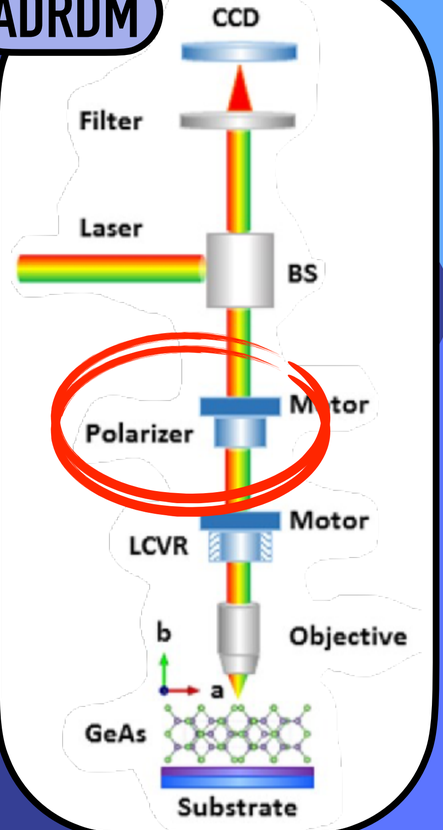

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RAS WITH AND WITHOUT THE ANALYSER

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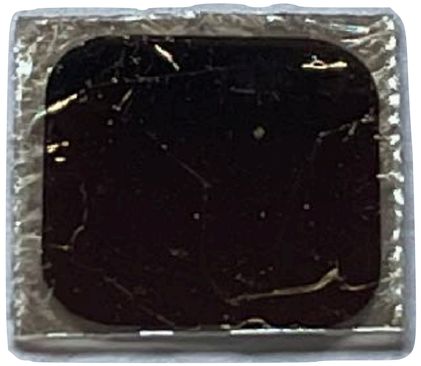
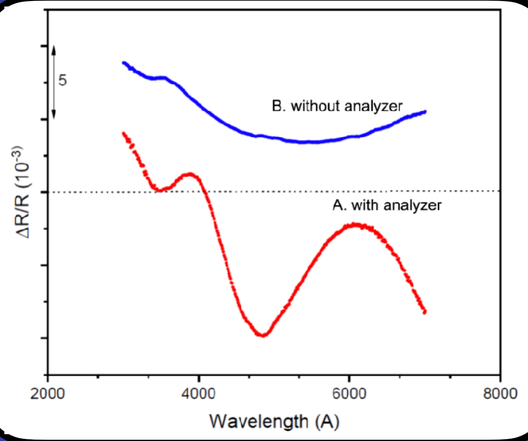
Comment on "In-Plane Optical Anisotropy and Linear Dichroism in Low-Symmetry Layered TlSe"

Ilaria Tomei, Simone Prili, Christian Petrucci, Fabrizio Arciprete, and Claudio Goletti*





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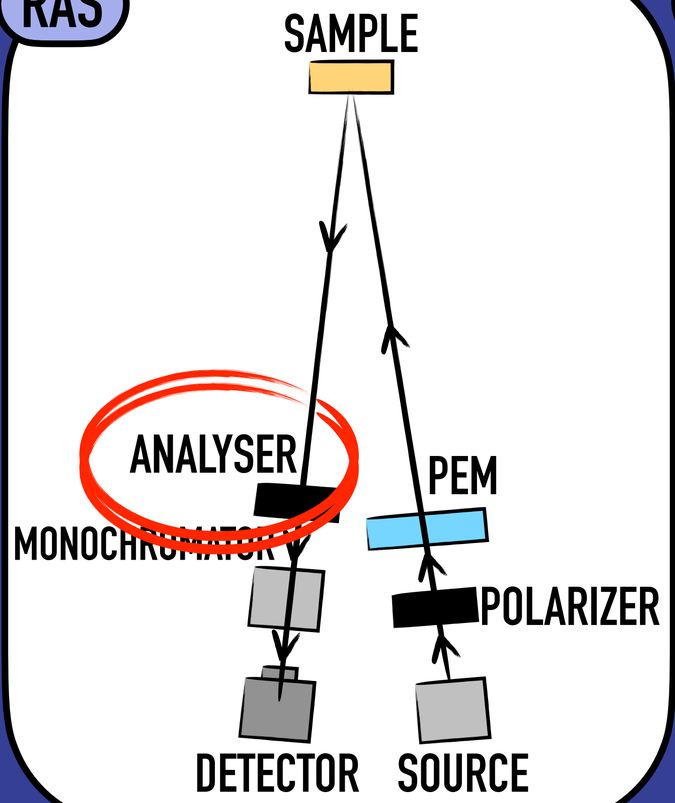

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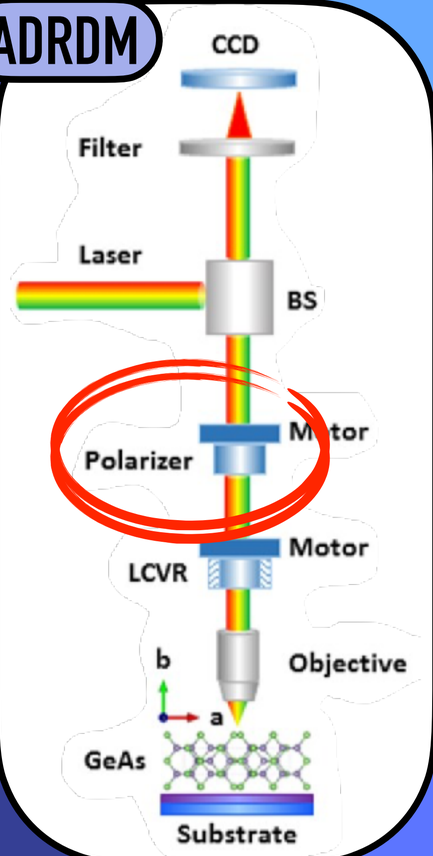

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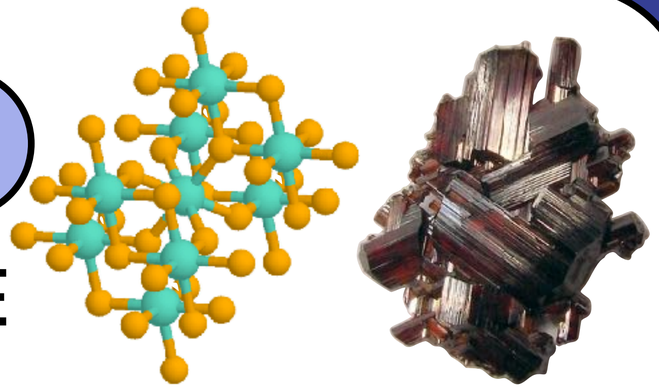
MATERIALS LIKELY PRESENT ON EARLY EARTH

TiO_2

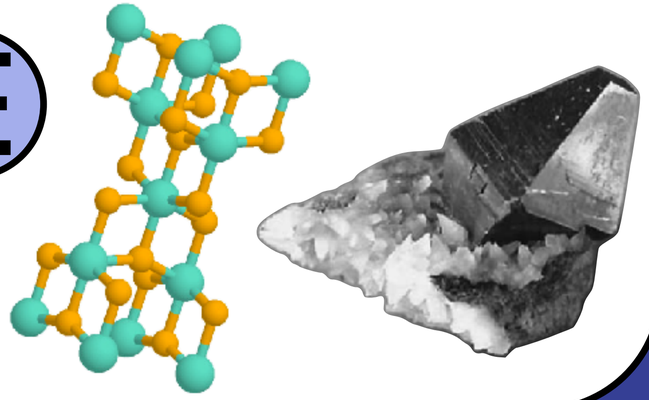
RUTILE

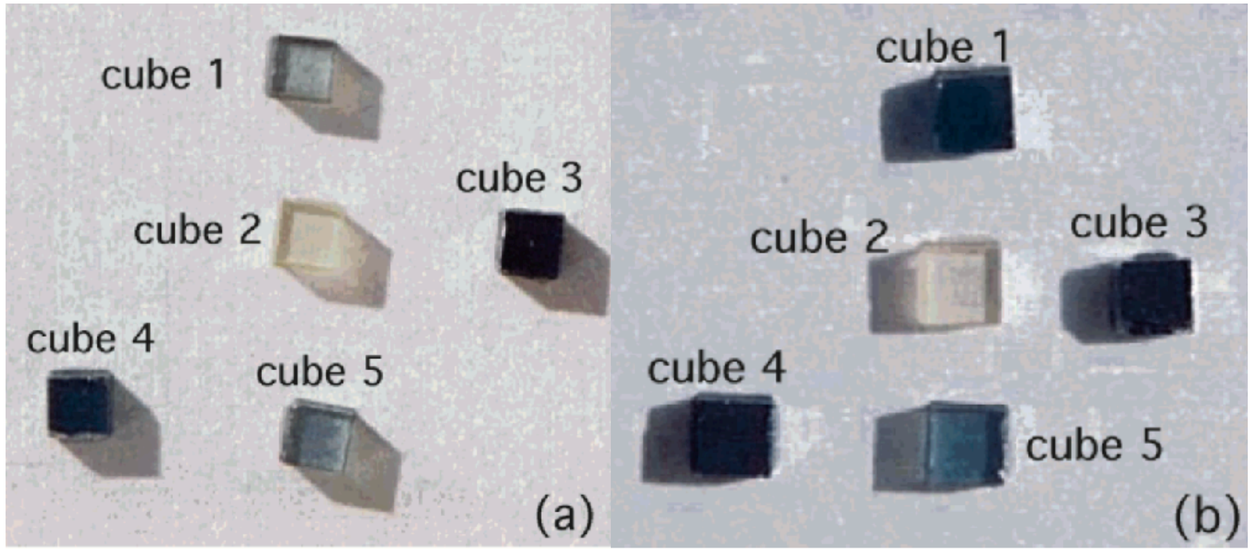
MOST STABLE PHASE



ANATASE

METASTABLE PHASE





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Article

Orthorhombic Symmetry and Anisotropic Properties of Rutile TiO_2

Nevill Gonzalez Szwacki,* Piotr Fabrykiewicz, Izabela Sosnowska, François Fauth, Emmanuelle Suard, and Radosław Przeniosło

Cite This: *J. Phys. Chem. C* 2023, 127, 19240–19249
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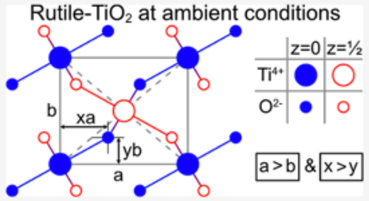
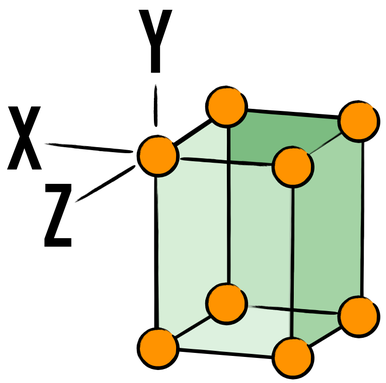
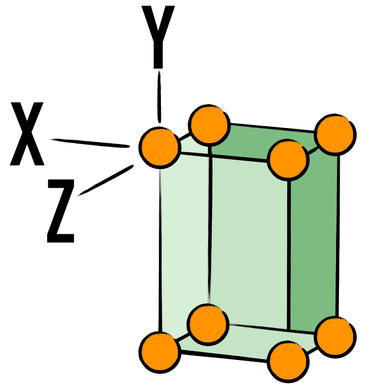
ABSTRACT: The symmetry of the material is an important factor determining its properties. In this work, we demonstrate both experimentally and by numerical simulations that the actual symmetry of the rutile phase of TiO_2 is orthorhombic, described with space group *Pnnm*, in contrast to what it is commonly believed that rutile TiO_2 has a tetragonal symmetry, described with space group $P4_2/mnm$. We present very precise first-principles calculations for the determination of the structural properties of rutile TiO_2 and highlight the relevance of using the revised regularized SCAN meta-GGA density functional for the interpretation and analysis of neutron and synchrotron radiation diffraction measurements. The lowering of the symmetry has a small but not negligible influence on the elastic, vibrational, and optical properties of rutile TiO_2.







TETRAGONAL

TWO AXES EQUAL IN LENGTH. ALL AXES PERPENDICULAR

ORTHORHOMBIC

ALL AXES UNEQUAL IN LENGTH. ALL AXES PERPENDICULAR

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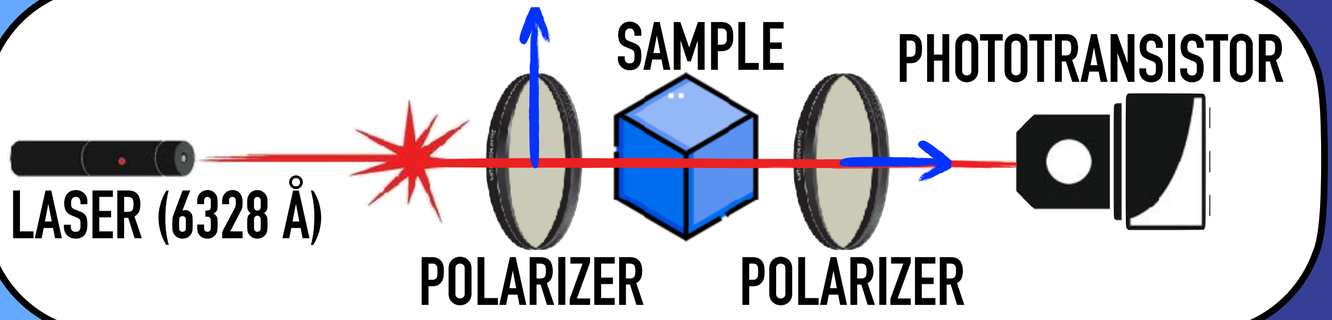

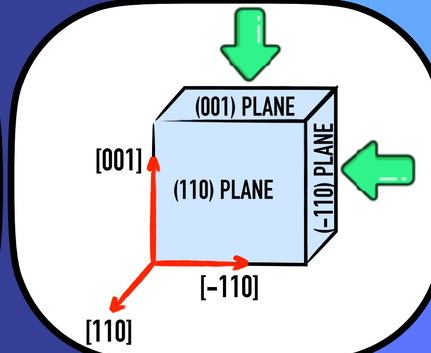

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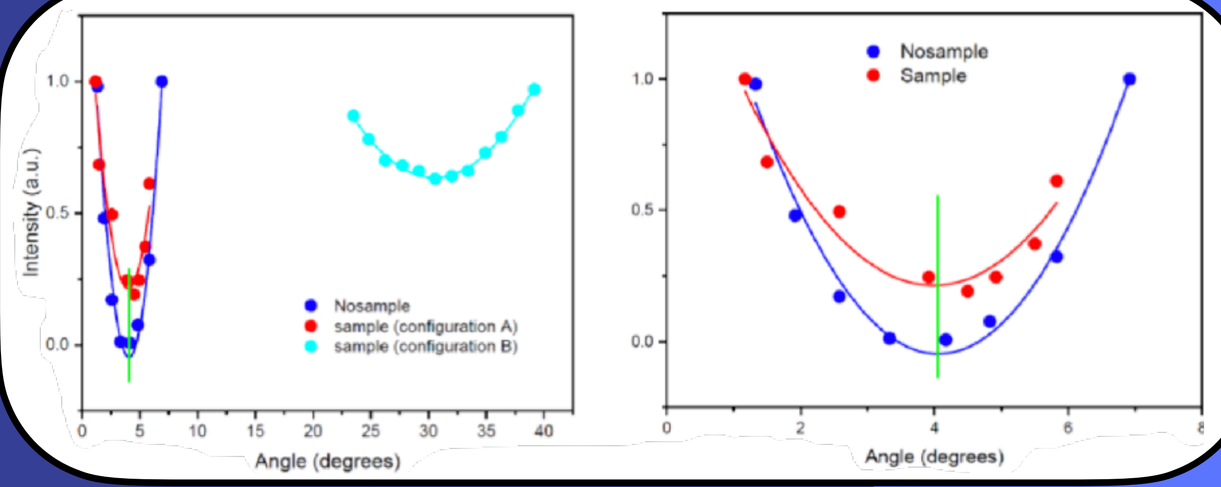
Comment

Comment on "Orthorhombic Symmetry and Anisotropic Properties of Rutile TiO_2"

Ilaria Tomei and Claudio Goletti*

10.1021/acs.jpcc.5c00661
J. Phys. Chem. C, **2023**, *127* (38), 19240−19249 DOI: 10.1021/acs.jpcc.3c04573



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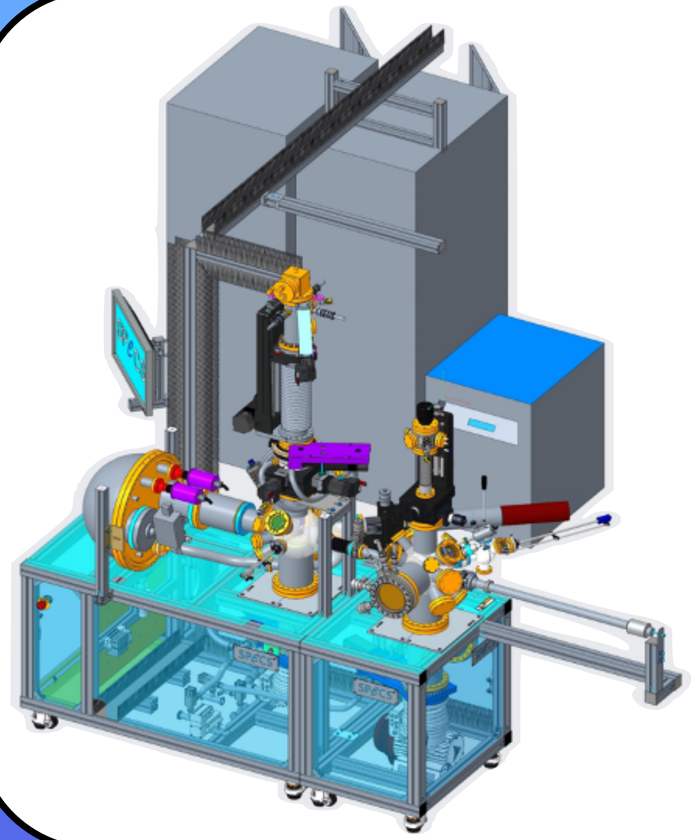

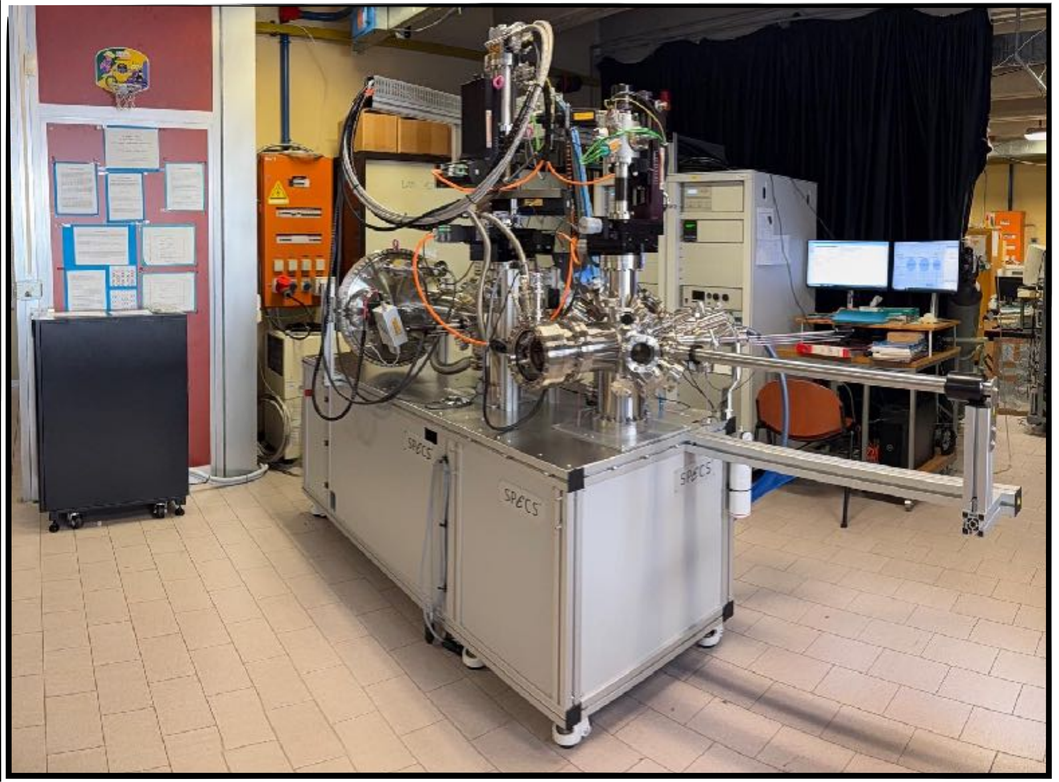

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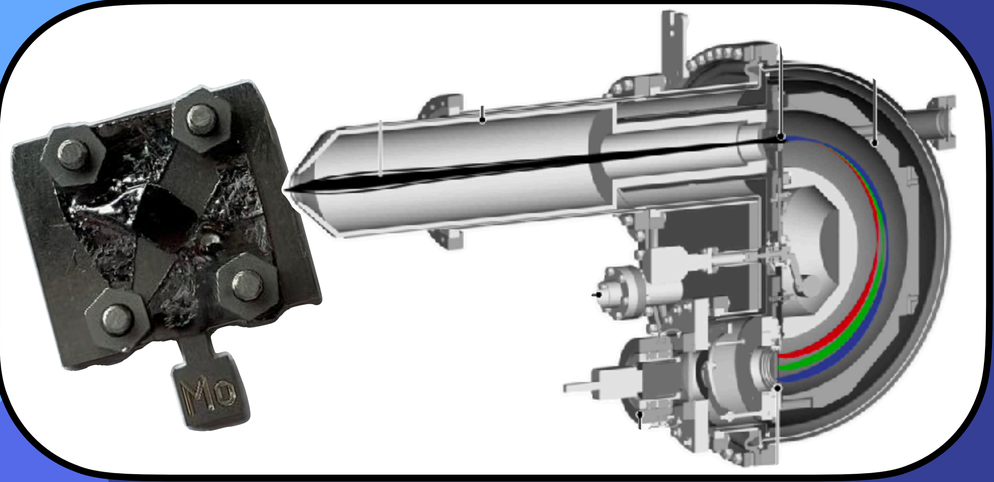
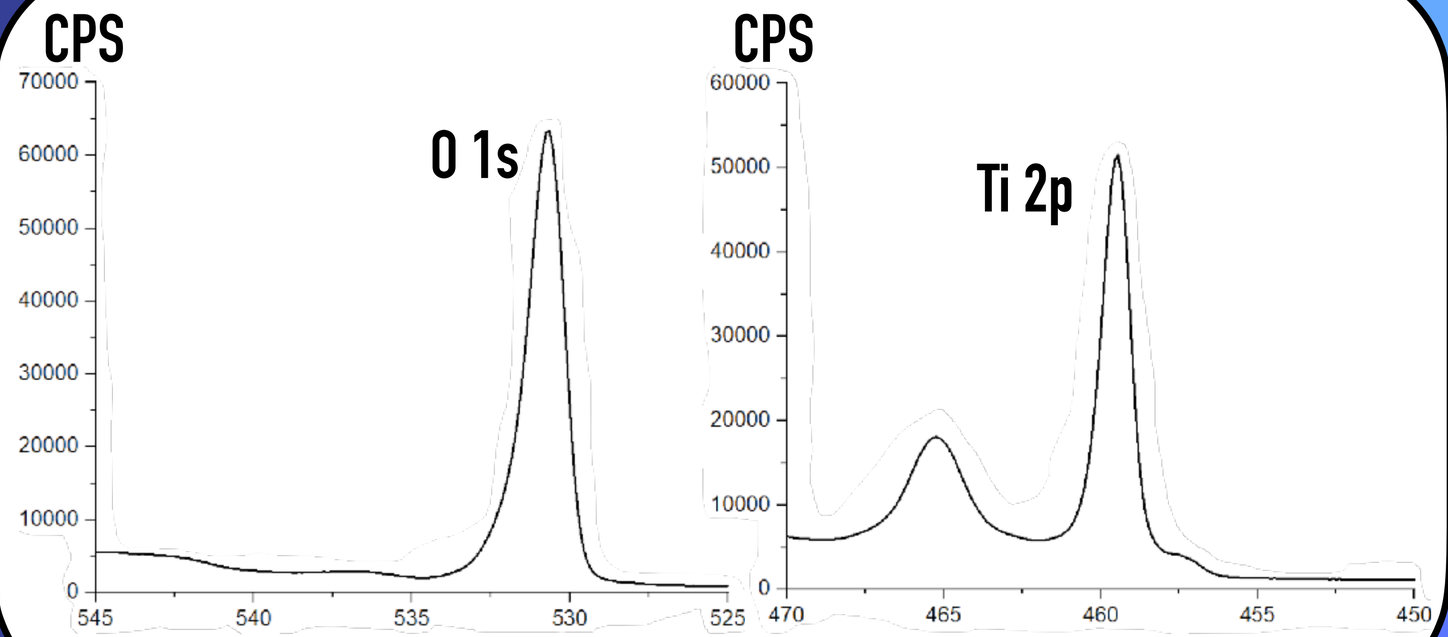
XPS CORE LEVEL SPECTRA OF ANATASE TiO_2





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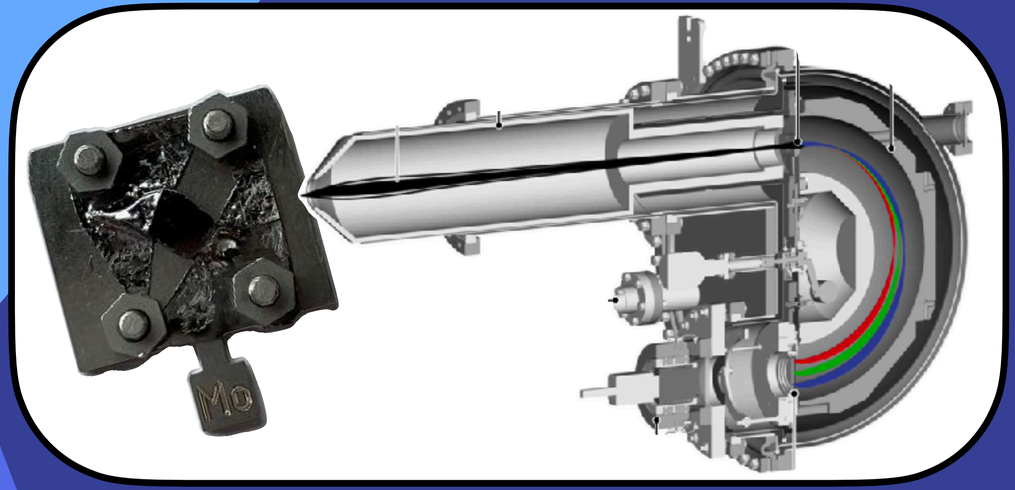

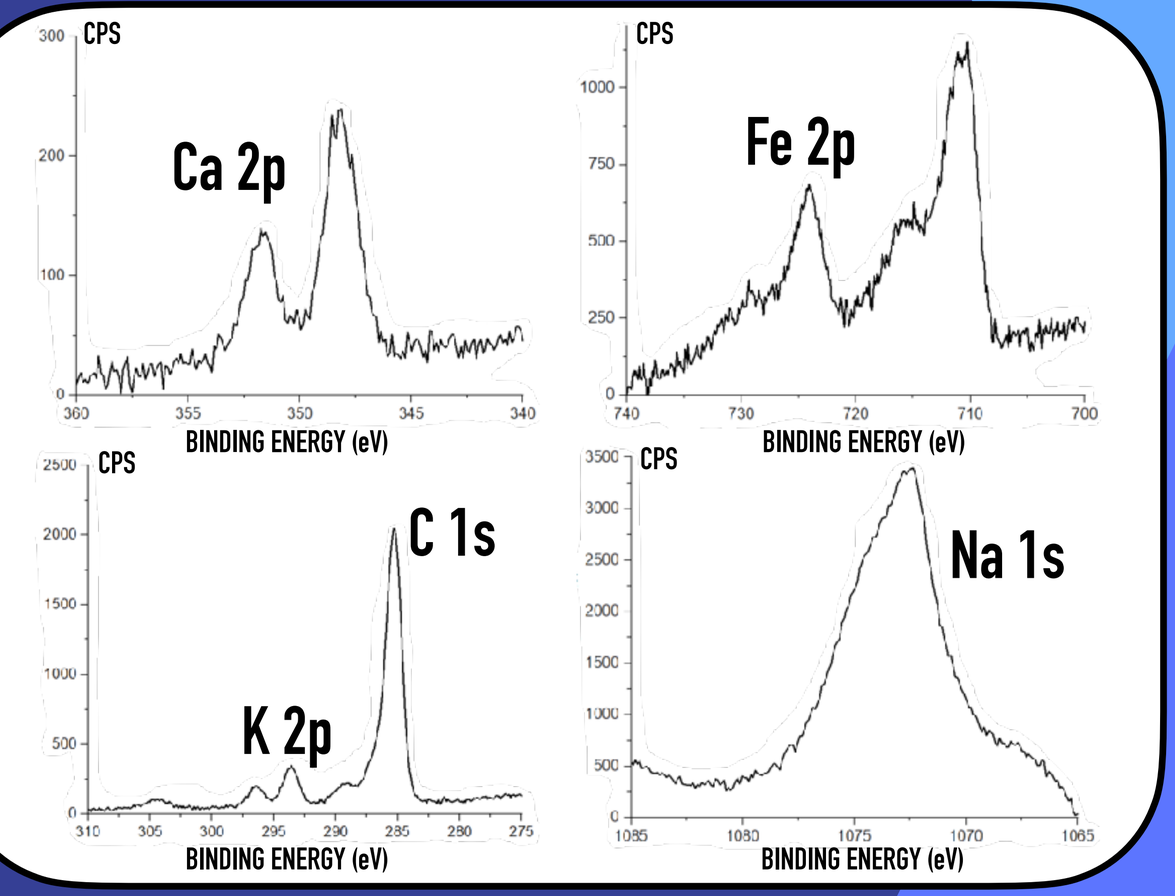

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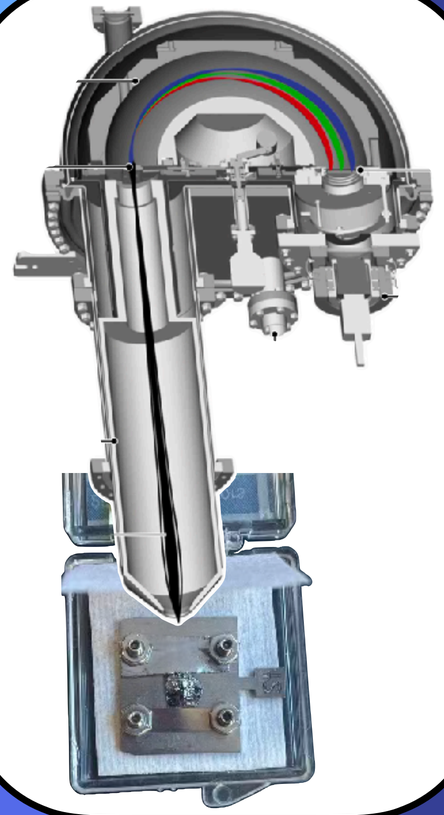
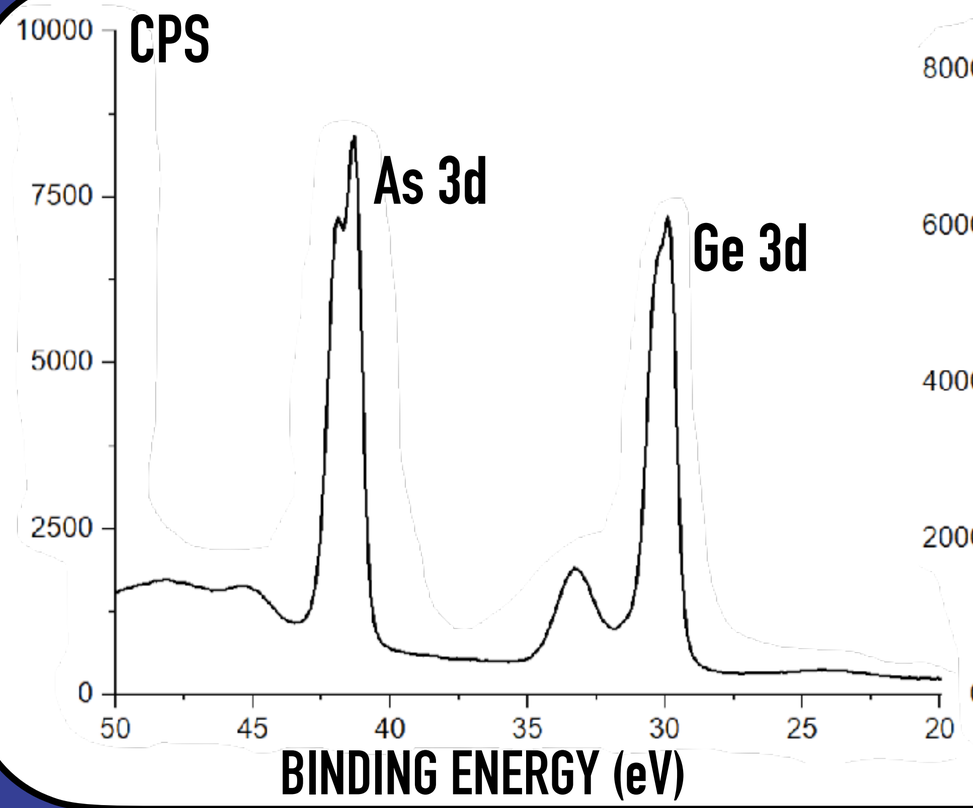
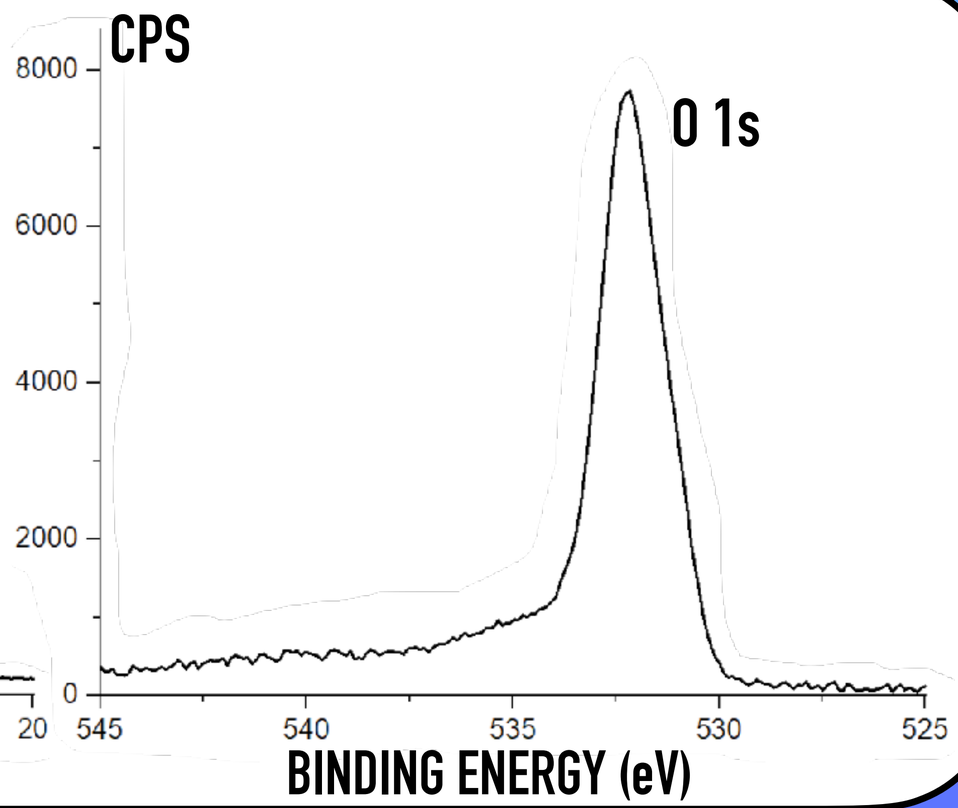
VAN DER WAALS MATERIALS GeAs







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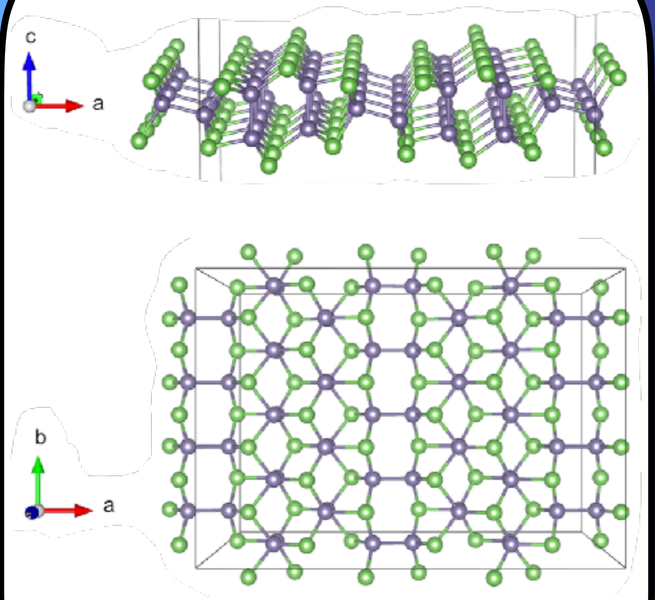

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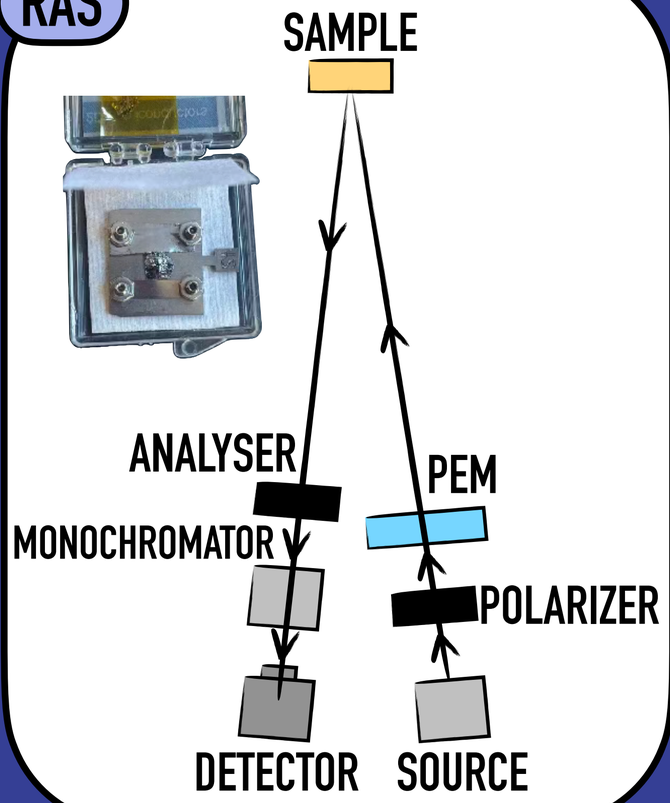
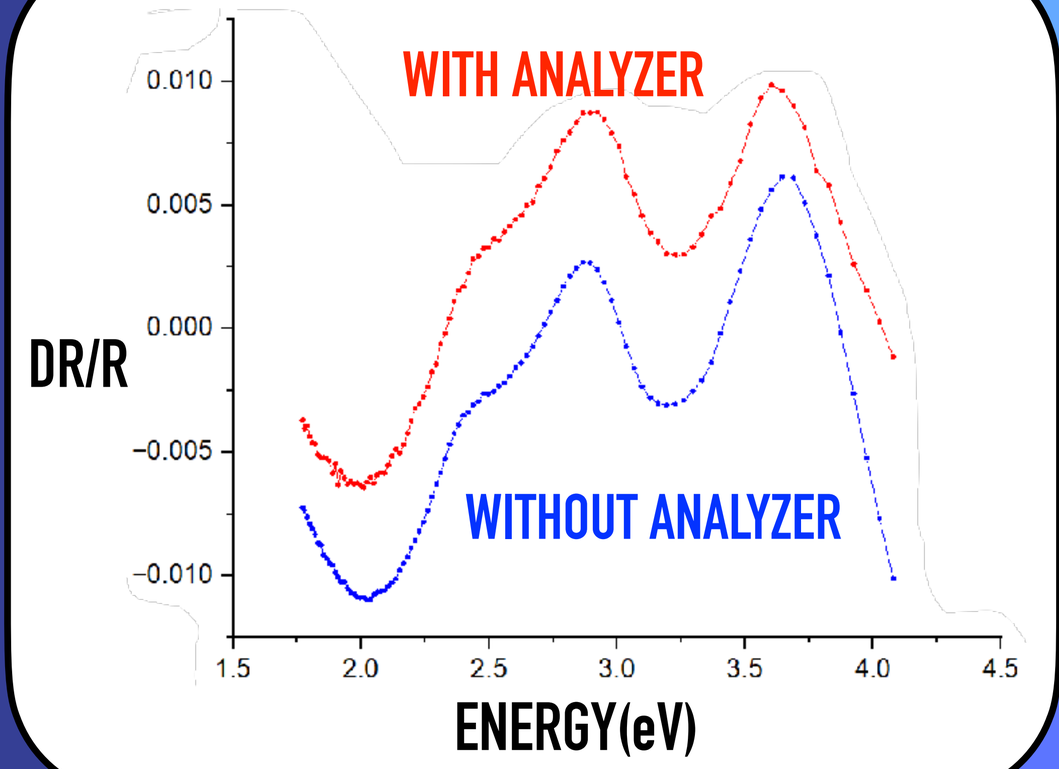
RAS





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CHIRAL MOLECULES IN SOLUTION CD-RAS

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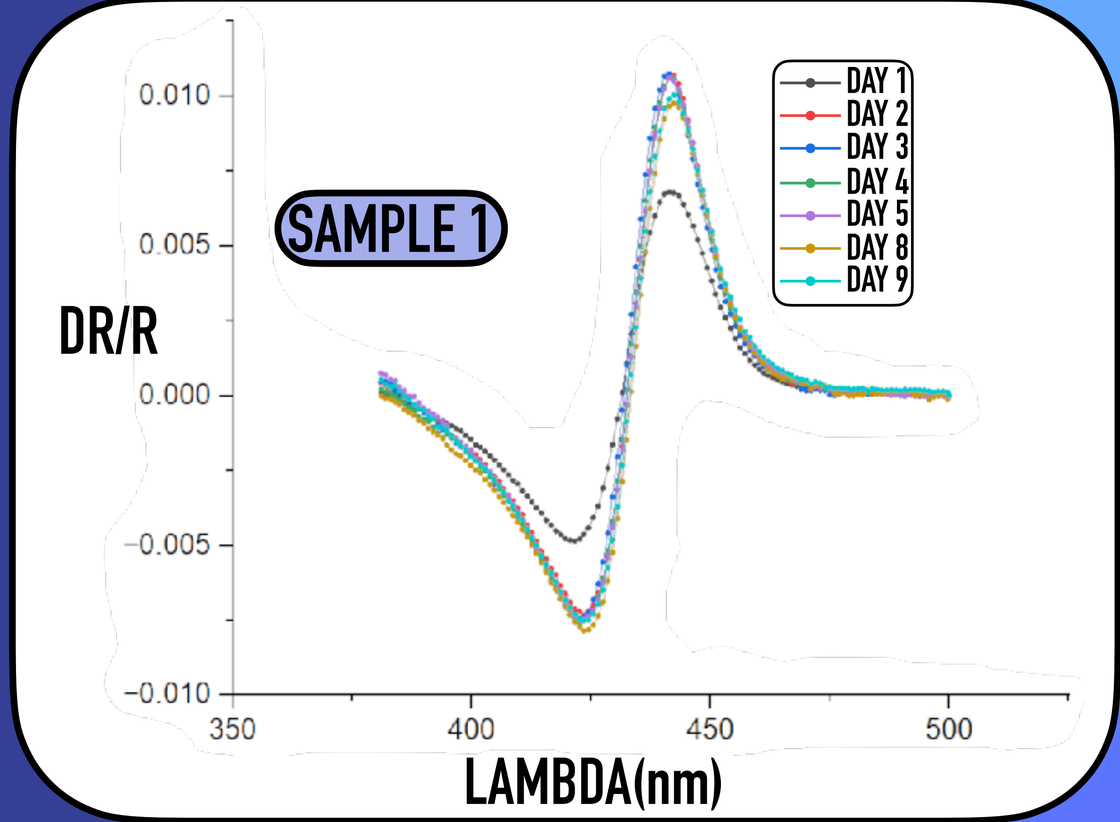

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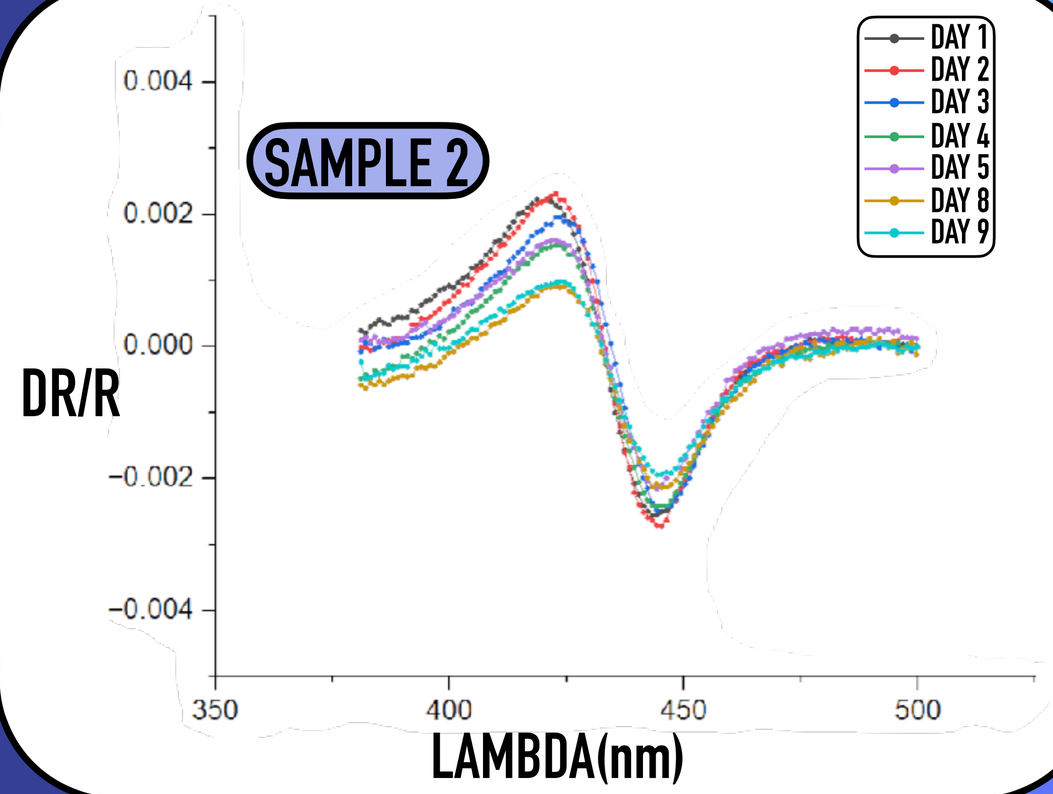

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