

OSCARS

Open Science Clusters' Action
for Research & Society

Funded Project

AMBCAT – Digital Amber Catalogue

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Implemented by



Helmholtz-Zentrum
hereon



HELMHOLTZ

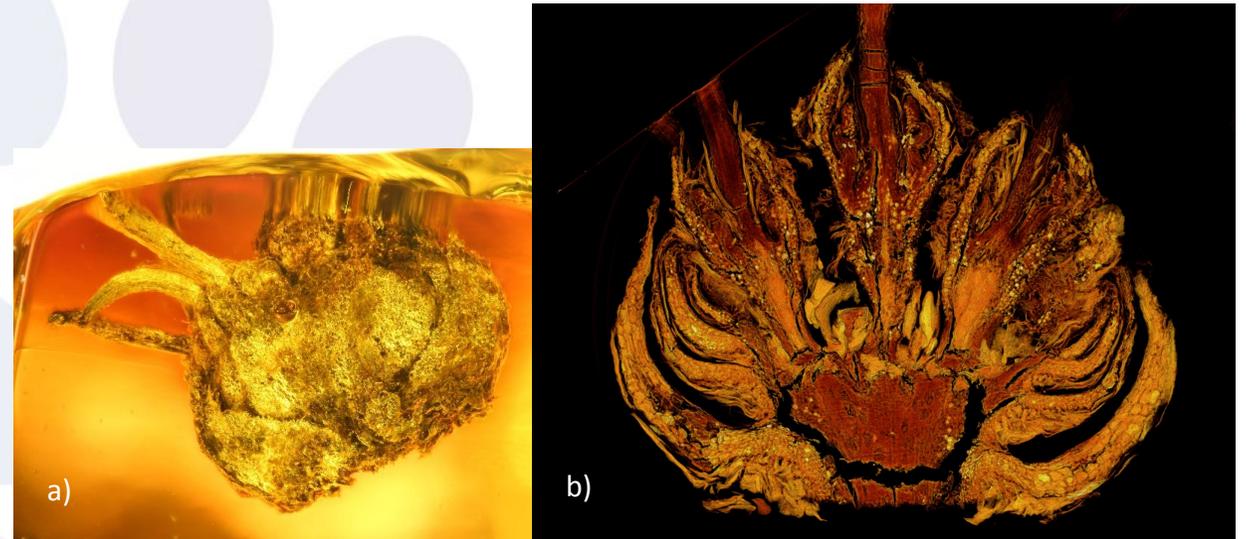
RESEARCH FOR GRAND CHALLENGES



Funded by
the European Union

What problem(s) did you plan to solve?

- Amber fossils are rare and physically restricted research objects
- CT imaging reveals hidden structures and enables non-destructive digital analysis
- However, imaging data and metadata are **fragmented** and **not openly accessible**



Amber fossil with flower inclusion

a) Light microscopy image

b) μ CT image revealing internal structures

Source:

Sadowski, E.-M., J. U. Hammel, and T. Denk. 2018. Synchrotron X-ray imaging of a dichasium cupule of *Castanopsis* from Eocene Baltic amber. *American Journal of Botany* 105(12): 2025–2036.

What have you done to solve the problem?



Project Goal

- Central FAIR data hub for digitally imaged amber fossils
- Web-based platform for  Search |  Access |  Exploration

Current Status

- SciCat-based metadata infrastructure implemented
- Metadata for > 1,500 amber datasets integrated
- Ongoing refinement and extension of ingestion workflows



What are the key results achieved to date and how have you made them available to the broader community?



Automated Ingestion

- Standardised amber metadata template developed
- Automated ingestion workflow into SciCat implemented



Metadata Curation Interface

- Web application for reviewing, editing, and validating metadata



3D Visualisation Exploration

- Evaluation of browser-based tools for interactive fossil visualisation

How will make your results sustainable over time - How will the scientific community/-ies further exploit them?

- Long-term hosting and curation at DESY using established infrastructure
- FAIR and open standards to ensure long-term reuse
- Expansion to include additional institutions and broader public access

AMBCAT establishes a sustainable and interoperable infrastructure for digital amber research

Who is doing it

- Dr. Jörg U. Hammel (Hereon)
- Dr. Frank Schlünzen (DESY)
- Neele Rahmlow (DESY)



Consortium Use Case Partners

- Dr. Ulrich Kotthoff (LIB) - Germany
- Dr. Danilo Harms (LIB) - Germany
- Dr. Benjamin Wipfler (LIB) - Germany
- Dr. Eva-Maria Sadowski (MfN) - Germany
- Dr. Ricardo Pérez-de la Fuente (OUM) - UK
- Dr. David Peris (CSIC-CMCNB) - Spain
- Dr. Viktor Baranov (CSIC) – Spain
- Dr. Brendon Boudinot (SMF) – Germany
- Dr. Monica Solorzano-Kraemer (SMF) –Germany
- Dr. Hans Pohl (FSU) – Germany
- Dr. Joachim Haug (LMU) - Germany

Metadata Ingestion Workflow



Template

ingest



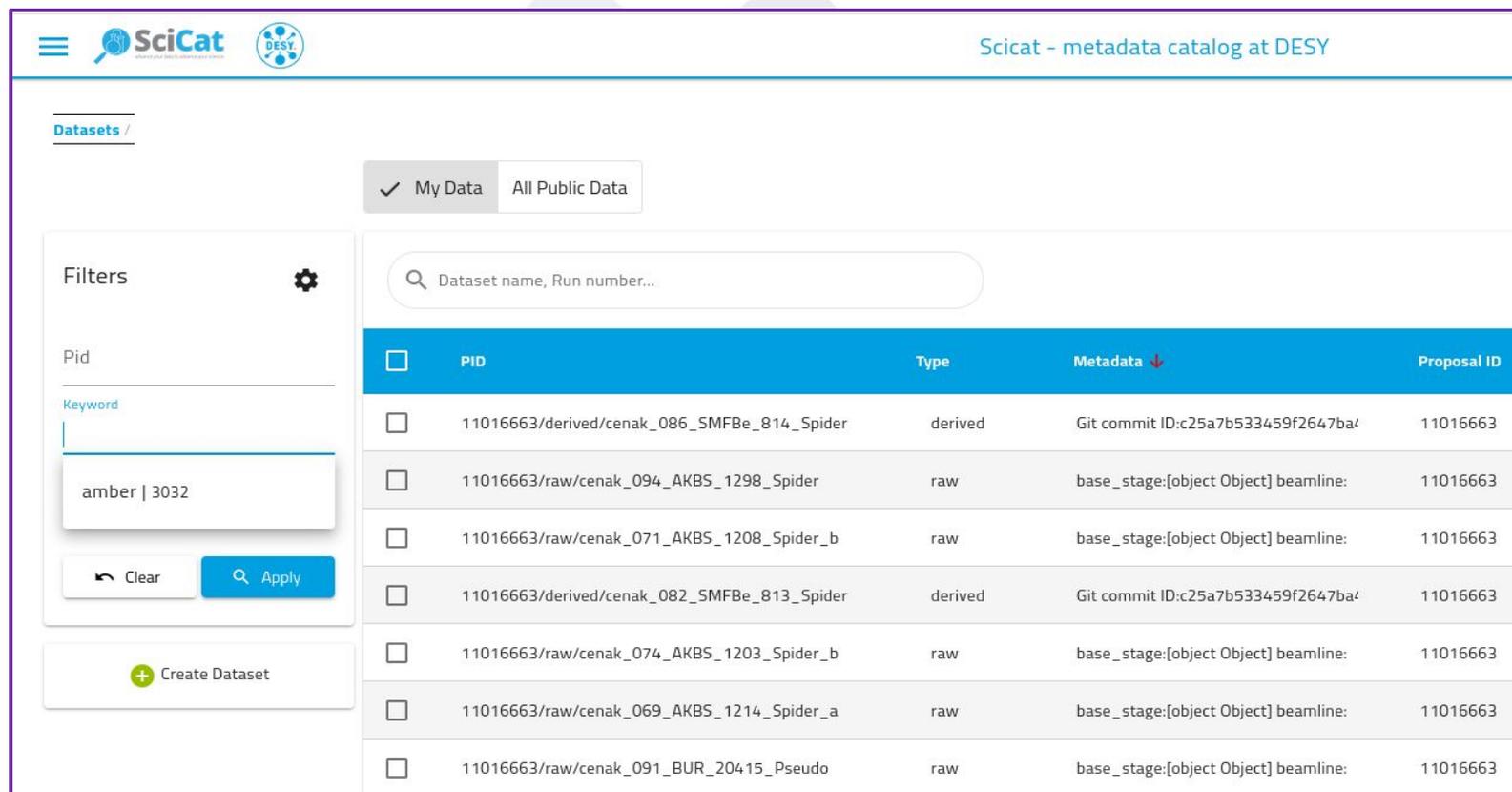
SciCat Database

curate



Web Interface

Amber Metadata in SciCat



The screenshot displays the SciCat metadata catalog interface. The page title is "Scicat - metadata catalog at DESY". The breadcrumb path is "Datasets /". There are two tabs: "My Data" (selected) and "All Public Data". A search bar contains the text "Dataset name, Run number...". On the left, a "Filters" sidebar shows a search for "amber" with a "3032" count. Below the search bar is a "Create Dataset" button. The main content is a table of datasets.

<input type="checkbox"/>	PID	Type	Metadata ↓	Proposal ID
<input type="checkbox"/>	11016663/derived/cenak_086_SMFBe_814_Spider	derived	Git commit ID:c25a7b533459f2647ba4	11016663
<input type="checkbox"/>	11016663/raw/cenak_094_AKBS_1298_Spider	raw	base_stage:[object Object] beamline:	11016663
<input type="checkbox"/>	11016663/raw/cenak_071_AKBS_1208_Spider_b	raw	base_stage:[object Object] beamline:	11016663
<input type="checkbox"/>	11016663/derived/cenak_082_SMFBe_813_Spider	derived	Git commit ID:c25a7b533459f2647ba4	11016663
<input type="checkbox"/>	11016663/raw/cenak_074_AKBS_1203_Spider_b	raw	base_stage:[object Object] beamline:	11016663
<input type="checkbox"/>	11016663/raw/cenak_069_AKBS_1214_Spider_a	raw	base_stage:[object Object] beamline:	11016663
<input type="checkbox"/>	11016663/raw/cenak_091_BUR_20415_Pseudo	raw	base_stage:[object Object] beamline:	11016663

Web-based Metadata Curation Interface

Additional scientific metadata that you can customize:

scan						
mode	Number	▼	360			
ref_count	Number	▼	500			
energy	Quantity	▼	17998	eV	▼	
microscope						
aperture	Number	▼	0.8			
focus	Number	▼	0.799766			
lens_changer	Number	▼	4.05			
mirror	Number	▼	-50			
Add ▼						