

M. M. Becker* I. L. Paulet St. Franke D. Loffhagen

INP Greifswald Felix-Hausdorff-Str. 2, 17489 Greifswald

*markus.becker @inp-greifswald.de

Progress of the research data management platform InPT-Dat

Introduction

- InPT-Dat ("Interdisziplinäre Plasmatechnologie-• The project Datenplattform") aims to tackle the question of how research results in the different fields of low-temperature plasma physics (physics, chemistry, biology, medicine and very recently agriculture) can effectively be linked together and made accessible and reusable for scientists and industry in the different fields.
- The goal of the project is to establish a research data management platform for the collection and provision of research data from all fields of low-temperature plasma science and technology.

Conception of the data management platform



Summary and future plans

- The Drupal based open data platform DKAN is used to establish an institutional research data management platform at INP Greifswald.
- An extension to the Dublin Core metadata scheme is developed to account for the interdisciplinary requirements in plasma technology.
- The integrated DKAN features and Drupal modules for direct data access and online visualization will be used for linking related data.
- As a long-term goal the data platform is planned to be opened for external usage including the option for third-parties to add data sets.

Solution approach

- Development of a web-based information platform on the basis of existing repository software.
- Evaluation of selected repository software systems (open source): DSpace, Invenio, Islandora / Samvera (Fedora), DKAN, CKAN:

InPT-Dat data base

- + metadata
- Storage and sharing of publications / reports + data sets (tables, images, binary data, ...)
 - Content indexing and full-text search
 - Direct linking and visualisation of data records
 - Directory of plasma sources and applications

Benefit

- Version-safe long-term archiving of research data according to the guidelines of good scientific practice.
- Simplified reuse of interdisciplinary research data, especially for researchers from other fields.
- Merging of heterogeneous research data from different fields of science \rightarrow generation of new scientific findings.

Pros Cons Pros Use of well accepted metadata Widely used and recognized in No direct linking of data

scientific communities: records provided • Difficult to adapt to the specific Use of well accepted metadata standards requirements

Built-in Metadata harvesting

INVENIO)

 Mostly for literature data • Difficult to adapt to the specific Extended metadata export requirements features (BibTeX, EndNote, ...)

Cons Pros Use of well accepted metadata Complex modular structure standards Strong conceptual changes between different versions Built-in Metadata harvesting Advanced data linking features

ckan				
Pros	Cons			
 Easy to adapt to specific requirements Advanced preview features for different data types 	 Mostly used in public sector Non-standard metadata scheme No direct linking of data records provided 			

dkan				
	Pros	Cons		
	 Easy to adapt to specific requirements (full Drupal functionality) 	 Mostly used in public sector Metadata harvesting features related to public sector 		
	 Advanced preview features for different data types 			
	 Linking of data sets possible 			

DKAN was chosen as a basis for the data platform.

Extension of the Dublin Core metadata standard according to the interdisciplinary requirements of plasma technology

Status of the data management platform

- Problem specific adjustment of DKAN in progress
- Metadata fields for plasma technology added
- Customized ingest workflow implemented
- Successful integration of Apache Solr for efficient full-text search and facetted search features

Example of facetted search



The Leibniz Institute for Plasma Science and Technology FROM IDEA TO PROTOTYPE

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Data set with additional resources and metadata





Plasma-deposited fluorocarbon polymer films on titanium for preventing cell adhesion: a surface finishing for temporarily used orthopaedic implants

🖓 Plasma Medicine 🛛 🔂 Thin film depositions

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The Department for Plasma Surface Technology bundles experience ir of vears levelopment of plasma-assisted processes for modification of surfaces for applications, as well as in the high-tech sector, e.g. construction, automobile eronautics, optics, tool sector, nicroelectronics and in the life cience sector, e.g. implants, industry piosensors. food biomedical products TECHNOLOGICAL EQUIPMENT Plasma processes under low pressure and normal pressure conditions Determination of chemical composition, binding and structure Determination of wearresistance Investigation of mechanical properties Determination of contact angle and surface energy Analysis of topography and

The design of a titanium implant surface should ideally support its later application in clinical use. Temporarily used implants have to fulfil requirements different from permanent implants: they should ensure the mechanical stabilization of the bone stock but in trauma surgery they should not be integrated into the bone because they will be removed after fracture healing. Finishing of the implant surface by a plasma-fluorocarbon-polymer (PFP) coating is a possible approach for preventing cell adhesion of osteoblasts. Two different low pressure gas-discharge plasma processes, microwave (MW 2.45 GHz) and capacitively coupled radio frequency (RF 13.56 MHz) plasma, were applied for the deposition of the PFP film using a mixture of the precursor octafluoropropane (C3F8) and hydrogen (H2). The thin films were characterized by xray hotoelectron spectroscopy

Data and Resources

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	in CSV	Gas flow vs. film thickness Experimental data shown in Figure 4.	LIII Preview	🕹 Download
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	○ ₀ DATA	Dataset Experimental data used for the analysis.		📩 Download
/,	PDF	Finke2016p234002.pdf The use of metallic implants in orthopaedic and trauma		🕹 Download

microwave plasma
 radio frequency plasma
 plasma fluorocarbon polymer
 cell anti-adhesive surface

References

https://lucene.apache.org/ http://www.dspace.org http://invenio-software.org http://fedorarepository.org https://ckan.org https://getdkan.org





 (Υ) Cold physical plasma selects for specific T helper cell subsets with distinct cells surface markers in a caspase-dependent and NF-kB-independent manner

Plasmaoberflächentechnik (POT), Plasmaprozesstechnik (PPT)

🖗 Plasma Medicine 🛛 🔂 Thin film depositions

Exposure to cold physical plasma has been proposed to be of therapeutical value in in oncology via the generation of a number of biologically relevant redox-active molecules. Cancer cells can be recognized and eliminated by cells of the immune...

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via the DKAN API	Modified Date	2018-02-16	
	Release Date	2018-02-16	
Social	Identifier	0ed68591-b1c3-41a9-afb7-b8a665f9f83d	
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