National Digital Library of India

Development of National Digital Library of India – Towards Building a National Asset

WINNER “Billionth South Asia Award 2017: in Learning and Education Category for Android Mobile App

NDL: VISION & MISSION

REGIONAL (NORTH-III) IDR WORKSHOP
Library, Indian Institute of Advanced Study, Shimla

NMEICT: National Mission on Education Through Information and Communication Technology

Prof. PARTHA PRATIM DAS
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Joint PI, NDL Project, NME-ICT, MHRD
Indian Institute of Technology, Kharagpur

21-SEP-2017
BUILD UP
NATIONAL DIGITAL LIBRARY OF INDIA
AS A NATIONAL KNOWLEDGE ASSET –
THE KEY DRIVING FORCE FOR EDUCATION,
RESEARCH, INNOVATION, AND
KNOWLEDGE ECONOMY IN INDIA
NDL Mission

To create a 24x7-enabled integrated NDL as a ubiquitous digital knowledge source of the nation – catering to immersive e-learning for all learners at all levels in all areas

To initiate a movement for integrated digital learning across India
NDL Motto

INCLUSIVE & OPEN
Libraries are more important to the education system than the institutions such as schools, colleges and universities

– Rabindranath Tagore
National Digital Library: Issues

**User-side**
- Wide geographic expanse & Large population
- Huge number of students
- Large number of institutions
- Varied linguistic diversity
- Severe lack of Teachers

**Provider-side**
- Wealth of digital content
  - Books and Articles
  - ETD
  - Question Papers and Solutions
  - Video Lectures - MOOCs
  - Simulations & Animations
  - NMEICT Projects
  - Data
  - ...
- No single-window search
- Google search uses keyword – no metadata search
- Widely varied DL technology
- Lack of Interactivity, Vernacular support
- Low integration between content and learning system
- Weak ecosystem between learners and teachers
National Digital Library: Service Architecture

Content Creation
Content Search
Learning Content
Experience-based Learning
Multi-Lingual Content
Mobile Apps
Authoring Services
Acquisition Services
Dissemination Services
Digital Repository
Digital Library
Learning Services
Personalization Services
Localization Services
Open Services...
National Digital Library
Content Borrowing
Content Access
Multi-faceted Interface
APIs
IIT, Kharagpur
21/09/2017
Prof. P P Das, CSE, IIT, Kharagpur
Presentation Model

- Not a new library – an umbrella
- Collects and ingests metadata only
- Presents full-text from source view
- Provides:
  - Search
  - Browse
Objective and Scope

TARGETS
CONTENTS,
STAKEHOLDERS,
CONTRIBUTORS,
USERS,
ARCHITECTURE, AND
THE BIG PICTURE

Objective and Scope

- Books are for use
- Every reader his [or her] book
- Every book its reader
- Save the time of the reader
- The library is a growing organism

S R Ranganathan Laws
Objectives

- Create a 24X7-enabled Infrastructure for NDL with single window search facility – To include h/w systems, networks, s/w tools, applications and interoperability standards
- Harvest IDRs (Institutional Digital Repository) across institutions of the nation to provide integrated access
- Facilitate select institutes to disseminate existing content and create new digital content
- Provide support for immersive E-learning environments at multiple levels spanning across
  - All academic levels – school to college to university to life-long learning
  - All disciplines – Science, Arts, Humanities, Engineering, Medical, Law, and
  - All languages (vernacular) used as medium of instruction.
- Support interfaces in vernacular & for differently abled users
Digital Contents

- Digital, Surrogate
- Digital, Metadata
- Digital, etc.

Content at NDL
- Born-digital object
- Digital surrogate of a physical object
- Digital metadata of physical object

Metadata at NDL
- NDL does not store contents
- NDL only ingests metadata for Search & Browse
- Content (Full-text) is delivered from Source

A content is included (metadata ingested) in NDL if it is expected to have educational value
Faculty Publications, ETD (Electronic Thesis & Dissertation): DSc-PhD-Masters-Undergrad, Research Projects

Books & Periodicals, Open Access Journals, E-Books & Subscribed E-Resource

Annual Reports, Project Reports, Convocation, Working Papers, Others

Encyclopaedia Dictionaries Directories Others

Lecture Slides, Videos, Class Notes, Courseware

Term Papers, Assignments, Solutions

Lab Experiments, Manuals, Case Studies

Question Banks (JEE / GATE / NET / CAT ), Model Answers

Institutions of School & Higher Education, Boards

Research and Professional Institutions, Central / State University

Institutional and Open Contributions. Multi-modal, Multi-faceted

Datasets, Benchmarks, Models, Maps, Software

Manuscripts, Painting, Sculpture, Music, Dance, Drama

Audio & Video Content

Range of Contents
Content View Architecture

Vertical-Specific Custom Interface and Search

- School Vertical
- Domain Vertical (Medical/Legal/…)
- Competitive Exam Vertical
- Data Vertical
- Application Vertical

Domain Metadata

MCQ / MSQ / …

Data Browser

App Launcher

Search

Browse

Content Baseline

IIT, Kharagpur
### Stakeholders

#### Roles and Responsibilities

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Roles and Responsibility</th>
</tr>
</thead>
</table>
| **Government**    | 1. Sponsor and facilitator  
                    | 2. Content Contributor    
                    |   • Ministries / Departments 
                    |   • R & D Labs            |
| **Institutions**  | 1. Host Institution – IIT Kharagpur  
                    | 2. Contributing Institution – Supporting IDRss 
                    | 3. Participating Institution – Providing Users & Feedback |
| **Public**        | 1. Use and Feedback       
                    | 2. Metadata by Crowd Sourcing 
                    | 3. Content by Crowd Sourcing |
| **Industry**      | 1. Technology Providers  |
| **Publishers**    | 1. Metadata Provider     
                    | 2. Content Provider (under various licensing schemes) |
Contributors

CFTI, State and Central Universities, R & D Labs, Govt. Depts, Free Portals, Publishers, etc.
Registration is **Open to all**

Registration Types:
- **Individual**
  - Registers directly
- **Institutional**
  - By request from Institution
  - Managed by authenticated Nodal Person
  - Convenient for bulk upload of users
Architecture

- Index Management
  - Ingestion of Metadata
  - Indexing of Metadata for Search

- Content Management
  - Dissemination of local contents

- Learning Management
  - Creation of Content
  - Handling learning interactions
System Architecture

Learning Management

Content Management

Index Management
The Big Picture

NDL:
Content Repository

LMS:
Content Delivery for Learning

VUC:
Certification & Credit Transfer

National Digital Library of India

MOOCs LMS

Virtual University and Certification
Where the mind is without fear and the head is held high
Where knowledge is free
Where the world has not been broken up into fragments
By narrow domestic walls
Where words come out from the depth of truth
Where tireless striving stretches its arms towards perfection
Where the clear stream of reason has not lost its way
Into the dreary desert sand of dead habit
Where the mind is led forward by thee
Into ever-widening thought and action
Into that heaven of freedom, my Father, let my country awake.

– Rabindranath Tagore
Landing Page
### Institutional Registration Form

Only for institutes in India

For any clarification required for filling up this form please contact ndl-support@iitkgp.ac.in

#### 1. Particulars of Institute

<table>
<thead>
<tr>
<th>Field</th>
<th>Details</th>
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<tbody>
<tr>
<td>Institute name</td>
<td>National University of Juridical Sciences</td>
</tr>
<tr>
<td>Address</td>
<td>Address of the institute</td>
</tr>
<tr>
<td>State</td>
<td>Select State</td>
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<td>Website URL</td>
<td>For e.g. <a href="http://example.com">http://example.com</a></td>
</tr>
<tr>
<td>Type of Institute</td>
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<tr>
<td>Affiliation</td>
<td>Select affiliation</td>
</tr>
<tr>
<td>e-ShodhSindhu membership</td>
<td>No</td>
</tr>
<tr>
<td>Degrees offered</td>
<td>Select degrees</td>
</tr>
<tr>
<td>Number of registered students</td>
<td>No. students: ()</td>
</tr>
<tr>
<td>Number of faculty/teaching staff</td>
<td>No. teaching: ()</td>
</tr>
<tr>
<td>Number of non-teaching staff</td>
<td>No. non-teaching: ()</td>
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<tr>
<td>Internet facility available to students</td>
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</table>
Refine Search (Author) Page
Title: Transport, magnetic, and Sn-119 Mossbauer studies on magnetically ordered valence fluctuating compound SmRuSn3

Authors: MAZUMDAR, C
          HOSSAIN, Z
          NAGARAJAN, R
          GODART, C
          DHAR, SK
          GUPTA, LC
          PANDALI, BD
          VDJAYARAGHAVAN, R

Keywords: cerusn3

Issue Date: 1996

Publisher: AMER INST PHYSICS

Abstract: SmRuSn3 is a unique compound among the known Sm-based valence fluctuation (VF) systems. Its crystallographic structure has two inequivalent Sm sites and Sm ions at only one of them are in VF state while the Sm ions in the other site orders magnetically. Our (119)Mossbauer studies show a quadrupolar splitting at the Sn site, consistent with the noncubic symmetry of the Sm site. A broadening of the Mossbauer spectrum is seen due to magnetic ordering of the material. The transferred hyperfine field at Sn site at 4.2 K is small. (C) 1996 American Institute of Physics.

URI: http://dx.doi.org/10.1063/1.351996
     http://dspace.library.iitb.ac.in/xmlui/handle/10054/14612
     http://hdl.handle.net/100/1441

ISSN: 0021-8979

Appears in Collections: Proceedings papers
Transport, magnetic, and Sn-119 Mossbauer studies on magnetically ordered valence fluctuating compound SmRuSn3

Author: Mazumdar, D.; Hooshin, Z.; Nagarajan, R.; Sodart, O.; Chay, G. K.; Gupta, L. C.; Pedala, B. E.; Vijayaraghavan, R.

Source: IIT Bombay

Content type: Text

Publisher: AMER INST PHYSICS

File Format: HTM / HTML

Language: English

Subject Keyword: oxides3

Abstract: SmRuSn3 is a unique compound among the known Sm-based valence fluctuation (VF) systems. Its crystallographic structure has two inequivalent Sm sites and Sm ions at only one of them are in VF state while the Sm ions in the other site orders magnetically. Our (119)Mossbauer studies show a quadrupolar splitting at the Sm site, consistent with the noncubic symmetry of the Sm site. A broadening of the Mossbauer spectrum is seen due to magnetic ordering of the material. The transferred hyperfine field at Sm site at 4.2K is small. (c) 1996 American Institute of Physics.

Education Level: USG or PG

Learning Resource Type: Article
Transport, magnetic, and 119Sn Mössbauer studies on magnetically ordered valence fluctuating compound SmRuSn3

Citation: J. Appl. Phys. 70, 6346 (1996); doi: 10.1063/1.361696
View online: http://dx.doi.org/10.1063/1.361696
View Table of Contents: http://jap.aip.org/resource/1/JAPIAU/v79/i6
Published by the American Institute of Physics.

Related Articles
Valence fluctuation and electron–phonon coupling in La68–xCo10Cu20Co2 (x = 0, 34, and 68) metallic glasses
Intermediate valency of Eu in a cubic intermetallic compound Ce0.5Eu0.5Pd3
Appl. Phys. Lett. 84, 192503 (2009)
Interface and Mn valence effects in ferromagnetic insulating multilayers based on Mn and In oxide
Charge states of strongly correlated 3d oxides: from typical insulator to unconventional electron–hole liquid
The effect of mixed Mn valences on Li migration in LiMn2O4 spinel: A molecular dynamics study

Additional information on J. Appl. Phys.
Refine Search (Educational Level) Page

<table>
<thead>
<tr>
<th>Subject Category</th>
<th>Difficulty Level</th>
<th>Educational Level</th>
</tr>
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<tbody>
<tr>
<td>Author</td>
<td>Demonstration</td>
<td>Class XI to XII</td>
</tr>
<tr>
<td>Project OSCAR</td>
<td>Self Learning</td>
<td>Class IX to X</td>
</tr>
<tr>
<td>Magnetism and matter</td>
<td>Reading</td>
<td>Class XI to XII</td>
</tr>
<tr>
<td>Abstract</td>
<td>This chapter introduces the bar magnet, magnetism and Gauss’s law. It also includes magnetic properties of materials and permanent magnets and electromagnets.</td>
<td></td>
</tr>
<tr>
<td>Moving charges and magnetism</td>
<td>Reading</td>
<td>Class XI to XII</td>
</tr>
<tr>
<td>Abstract</td>
<td>This chapter introduces the concept magnetic force, motion in a magnetic field, motion in combined electric and magnetic fields. It deals with Bohr-Savart Law, Ampere’s circuit law.</td>
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<tr>
<td>Moving charges and magnetism</td>
<td>Assessment</td>
<td>Class XI to XII</td>
</tr>
<tr>
<td>Abstract</td>
<td>This chapter contains problems on moving charges and magnetism. The content consists of various questions about the chapter. The questions are divided into three parts: A) Multiple choice questions, B) Short view more</td>
<td></td>
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<tr>
<td>Physic: question paper</td>
<td>Assessment</td>
<td>Class XI to XII</td>
</tr>
<tr>
<td>Abstract</td>
<td>This section contains problem set having physics code no 35/1/1 of series 35/1 of class XI.</td>
<td></td>
</tr>
</tbody>
</table>
Chapter Five
MAGNETISM AND MATTER
NDL: Statistics (2016-05-01)

**NDL users**

- Users from 257 institutions have been registered with NDL
- Number of users who have activated their accounts: 33,903
- Number of users who have not activated their accounts: 181,989
- Total number of registered users: 215,892

**Site usage (by registered users only)**

- Number of currently logged-in users: 4
- Number of sessions where the user stayed in the site more than 30 minutes: 34,468
- Number of users who visited the site more than 5 times: 1,869

**Server statistics**

<table>
<thead>
<tr>
<th>Server</th>
<th>Average hits / second</th>
<th>Response time (in sec)</th>
<th>Content accessed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.02175439</td>
<td>0.96050482</td>
<td>5</td>
</tr>
</tbody>
</table>

Waiting for ndl.iitkgp.ac.in...
NDL Mobile App

Available on

Android

And

iOS
Institutional Roles and Responsibilities

Terms of Reference to Contribute to NDL

The worth of a librarian should be gauged by his power of attracting and looking after such circles by acting as the intermediary of an intimacy of relationship between reader and the library. – Rabindranath Tagore
Roles and Responsibilities

Host Institution

- IDR
  - Support for Setting up IDR
  - Installation CD
  - Manual
  - Training
  - IDR Service, if needed
- Metadata
  - NDL Metadata Standard
  - Creation, Curation Workflow
- User
  - Institutional Registration for Nodal Person
  - Bulk Addition of Users
- Ongoing Support
  - Over email, phone
  - Hands-on at NDL, if needed

Contributing or Participating Institution

- IDR (CI only)
  - Setup IDR in Institutional LAN
  - Register with OPENDOAR / ROADMAP
  - OAI-PMH compliance for harvesting
  - OAI-ORE compliance for full-text access
  - Allow external access & Update regularly
- Content (CI only)
  - Add Content
  - Encourage faculty, students, staff to contribute
  - Create and Curate Metadata
- User
  - Register as an Institution
  - Add users in bulk or send to NDL
- Promote
  - Organize Workshop
  - Identify and Integrate Source

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Technology of NDL

METADATA ENGINEERING

USER INTERFACE & EXPERIENCE TRACKING
• Metadata Standard
• Metadata Acquisition
Metadata Standard

Source: http://courseweb.ischool.illinois.edu/~butler9/LIS501b/current.html
Metadata Standard

- **Metadata**
  - Is primarily *textual information* relating to Content
  - Includes information that enables users to **identify, discover, search, browse, interpret, or manage** Content
  - Includes **hyperlinks** that direct users to Content on the Source
  - May include an **expressive description** of the Content

- **Metadata Standard**
  - Defines *common understanding of the semantics* of the data
  - Ensures **correct and proper use** and interpretation of the data
  - Defined through a **set of fields, vocabs (optional), and instructions** for fill-up
NDL Metadata Design Challenges

- **Wide category of resources**
  - Generic metadata or domain specific?

- **Openness of repository**
  - Closed metadata standard may fail to describe a new resource

- **Scale is enormous**
  - Manual annotation is infeasible
  - Automatic annotation guided by crowd sourcing?
Metadata Requirements Specs

• To describe any digital resource
  o Generic content metadata
    ▪ Contributor, Description, Language, Format etc.

• To describe domain specific resources
  o Educational content metadata
    ▪ Educational level, ToC, Type of learning material etc.
  o Thesis metadata
    ▪ Institution, advisor, degree, researcher
NDL Metadata Standard

NDL Metadata Standard v 1.0 is an **Open Virtual Standard**


- **Schema is categorized into three profiles:**
  - **Generic Metadata:**
    - Describes general attributes of the contents
    - Adopted from [Dublin Core Metadata Standard](http://www.loc.gov/island/pubs/metadata/dublin_core/dcnames.html)
  - **Educational Metadata:**
    - Describes the educational attributes of the resources and helps in enumerating properties of the contents relevant to teaching-learning process
    - Adopted from [Learning Resource Metadata Initiative (LRMI)](http://www.lrmi.org/
  - **Thesis Metadata:**
    - Describes dissertation or thesis related metadata fields
    - Adopted from [Shodhganga Thesis Metadata Standard](http://shodhganga.in/information/thesis.html)

- More profiles may be added in future

- **Uses the namespace of Dublin Core (dc.)**
Learning Resource Metadata

- Difficulty Level
- Rights URI
- Educational Framework
- Time Required
- Typical Age Range
- Pedagogic Objective
- Educational Level
- Interactivity Type
- Educational Use
- Learning Resource Type
- Educational Role
- Irmi.educationalFramework
- Irmi.educationalAlignment.educationalLevel
- Irmi.educationalAlignment.педагогическийObjective
- Irmi.educationalAlignment.дифференцированныйLevel
Thesis Metadata

- **Keyword**
  - dc.subject.keyword
  - dc.creator.researcher
  - dc.contributor.advisor

- **Researcher**
  - dc.type.degree

- **Advisor**
  - dc.publisher.department

- **Department**
  - dc.publisher.department

- **Place**
  - dc.publisher.place

- **Date Awarded**
  - dc.date.awarded

- **Institution**
  - dc.publisher.institution

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Metadata Acquisition
# Acquisition Scenarios

## Locate Content
- Harvest Institutional IDRstrs
- Crawl Websites
- In Bulk – from Publishers
- Donated by Source
- Source-supported API
- ...

## Acquire Metadata
- Creation
  - Manual
  - Automated
- Translation
  - Format
  - Standard / Schema
- Curation
  - Manual
  - Assisted
- Ingestion
Challenges in Metadata Acquisition

- Different sources follow different norm in annotation
  - Automation of curation

- Errors in sourced data
  - Error listing
  - Manual curation

- Errors in manual annotation
  - Review step before actual submission in database
  - Manual curation

- Set up norm/guideline
  - Controlled vocabulary
How do we ingest contents?

Metadata Translation

Institute 1

Institute N

Manual Submission

Automatic Crawling

Portal 1

Portal N

Metadata Extraction

Metadata Annotation
Multi-format Translator

Creation
- Manual
- Automated

Translation
- Format
  - Standard / Schema

Curation
- Manual
- Assisted

Ingestion

Reader

Metadata Translator

CMS Compliant Format

CSV
MARC
JSON
XML
IDR Harvesting

Creation
- Manual
- Automated

Translation
- Format
- Standard / Schema

Curation
- Manual
- Assisted

Ingestion

Harvester

Metadata Translator

IDR 1

IDR 2

IDR n

IDR 1

IDR 2

IDR n
Web Crawling

**Creation**
- Manual
- Automated

**Translation**
- Format
- Standard / Schema

**Curation**
- Manual
- Assisted

**Ingestion**

**Crawling Engine**

**Portal 1**

**Portal 2**

**Portal n**

**Metadata Generator**

**CMS Compliant Format**
Translation Issues

- Variation in Subject classification standards
  - Dewey Decimal Classification (DDC)
  - Library of Congress Classification (LCC)
  - Library of Congress Subject Headings (LCSH)
- Mapping terminology for different languages
  - Translate when equivalent terminology is present
  - Transliterate otherwise
Automated Metadata Extraction

**Creation**
- Manual
- Automated

**Translation**
- Format
- Standard / Schema

**Curation**
- Manual
- Assisted

**Ingestion**

Extractor and aggregator

Metadata Generator

CMS Compliant Format
NDL Metadata Extraction Toolkit

- Automated metadata extraction workflow
- Syntactic metadata extractor
  - Author name, ISBN, Publisher, dates etc.
- Table of content extractor
- Wikification for keyword extraction
- Learning resource metadata
- Toolchain for metadata extraction

Once completed and tested, the toolkit will be released to public and open-sourced
Experience Tracking and UI

- **Experience Tracking**
  - To offer customized search results

- **Multi-lingual Support**
  - Reduce cognitive load for native use

- **Personalization**
  - Customized UI to suit user grade

Experience API (xAPI) / Tin Can API

- Connects **learning content and learning systems** to record and track all types of learning experiences

- **Learning Record Store (LRS)**
  - Stores learning experiences

**Record:**

- Partha searched ‘tiger’
- Partha navigated to Tiger Wiki
- Partha studied Wiki (3 min)
- Partha downloaded tiger image (4 images)
- Partha checked tiger map (2 min)
- Partha enlarged map at Sunderbans (twice)
- Partha searched ‘national animal of India’

**Infer:**

Partha learnt – tiger is the national animal (of India)

... possibly

**Source:** [https://tincanapi.com/overview/](https://tincanapi.com/overview/)
UI Technology: Experience Tracking

LMS

NDL Repository

LRS

Tin Can API

LMS Tracker

Search Tracker

Search/Browsing

Visualization & Analytics

LMS Front End

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UI Technology: Web Interface

API End Points:

- RestFul API endpoint
  - CMS API, Index API and LMS API
- Parameterized access to the index
- API Sandbox

- Web interface is an app using NDL API
- Extended Search Features
  - Facet based search result refinement
  - DDC Topic tree based content browsing
  - Tag, comment on a content
  - Target group specific interface
  - Bookshelf
  - Rating and sharing
- NDL-Specific Features
  - Multi-lingual enablement
    - Multi-lingual query interface powered by Google transliteration
    - Cross-lingual search
  - Personalization
Copyright & License

HOW DOES NDL COPE WITH
COPYRIGHT AND LICENSING ISSUES
Copyright Act, 1957 (Amendment 2012)

Is metadata copyrighted?

Yes / No / May be

Copyright of Metadata is contested

Source: http://lj.libraryjournal.com/2013/02/opinion/peer-to-peer-review/metadata-and-copyright-peer-to-peer-review/

- Copyright is a bundle of rights given by the law to
  - Creators of literary, dramatic, musical and artistic works and
  - Producers of cinematograph films and sound recordings

- Rights are:
  - reproduction of the work,
  - communication of the work to the public,
  - adaptation of the work and,
  - translation of the work

- Creator / Author is the first Owner

- Ownership (Title) can be transferred (assigned)
Copyright of Metadata

- NDL principles as follows:
  - Vast Majority of Metadata is Not Subject to Copyright Restrictions
  - NDL’s Partners Share the NDL’s Commitment
  - NDL Asserts No Rights Over its Database of Metadata and Dedicates its Contributions to the Public Domain
  - Free and Unencumbered Access to Metadata

License Mechanisms

- **Content Access Views in NDL**
  - **Metadata View**
    - This shows the metadata of the item – as maintained in NDL
  - **Full Text View**
    - This shows the view and provides access to full text – offered by the content source

*a license encapsulates the rights & privileges that a copyright holder grants to someone else vis-a-vis something they have created*
Transport, magnetic, and Sn-119 Mossbauer studies on magnetically ordered valence fluctuating compound SmRuSn3

Author: Mazumdar, C. · Hossain, Z. · Nagarajan, R. · Godart, C. · Dhar, S. K. · Gupta, L. C. · Padalia, B. D. · Vijayaraghavan, R.

Source: IIT Bombay

Content type: Text

Publisher: AMER INST PHYSICS

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Language: English

Subject: cerusn3

Abstract: SmRuSn3 is a unique compound among the known Sm-based valence fluctuation (VF) systems. Its crystallographic structure has two inequivalent Sm sites and Sm ions at only one of them are in VF state while the Sm ions in the other site orders magnetically. Our (119)Mossbauer studies show a quadrupolar splitting at the Sm site, consistent with the noncubic symmetry of the Sm site. A broadening of the Mossbauer spectrum is seen due to magnetic ordering of the material. The transferred hyperfine field at Sm site at 4.2 K is small. (C) 1996 American Institute of Physics.

Other Identifiers: JOURNAL OF APPLIED PHYSICS, 79(3):6349-6351
0021-8979
http://dx.doi.org/10.1063/1.361996
http://hdl.handle.net/100/1441
Transport, magnetic, and Sn-119 Mossbauer studies on magnetically ordered valence fluctuating compound SmRuSn3

Show full item record

Title: Transport, magnetic, and Sn-119 Mossbauer studies on magnetically ordered valence fluctuating compound SmRuSn3
Author: MAZUMDAR, C; HOSSAIN, Z; NAGARAJAN, R; GODART, C; DHAR, SK; GUPTA, LC; PADAIA, BB; VIJAYAKRISHNA, R

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Abstract:

URL: http://dx.doi.org/10.1063/1.361999
http://dspace.library.iitb.ac.in/xmlui/handle/10088/14612
http://hdl.handle.net/100/1461

Date: 1996

[Full-Text URL from Source]
## Access Options

<table>
<thead>
<tr>
<th>Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open</td>
<td>Full-text available to all (Example: NCERT)</td>
</tr>
<tr>
<td>NDL Users</td>
<td>Full-text available through NDL, <em>not directly</em> from Source (Example: South Asia Archive)</td>
</tr>
<tr>
<td>Limited Access</td>
<td>Part of text available but full-text requires authorization by Source authority (Example: IISER, Bhopal)</td>
</tr>
<tr>
<td>Subscribed</td>
<td>Full-text available from institutions that have subscribed to the Source (Example: Springer)</td>
</tr>
<tr>
<td>Restricted</td>
<td>Full-text access requires authorization by Source authority and separate login to the Source (Example: IIT Jodhpur)</td>
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</tbody>
</table>
National Licensing

- An initiative by eSS:
  - e-ShodhSindhu: Consortium for Higher Education Electronic Resources

- Licensing being negotiated with Publishers
  - Institutional License:
    - Accessible from within designated institutional network: IP filtered
  - NDL Supported License:
    - Accessible if requested from NDL: Concurrent use-basis
Project Status
Prof. P P Das, CSE, IIT, Kharagpur

Completed:
Events: 20
Institutes: 630
Individuals: 1150

Scheduled:
Events: 2
Institutes: 50
Individuals: 120
NDL IDR Workshops

1. National (General) IDR WS @ IIT Kharagpur, 15/17-June-15
2. Regional (North-East-I) IDR WS @ IIT Guwahati, 04/05-July-15
3. Regional (North-I) IDR WS @ IIT Roorkee, 24/25-Aug-15
4. Regional (West-I) IDR WS @ M S University, 28/29-Jan-16
5. Regional (South-I) IDR WS @ IIT Madras, 25/26-Mar-16
6. Regional (South-II) IDR WS @ IISc, Bangalore, 20/21-May-16
7. Regional (South-III) IDR WS @ IIIT, Hyderabad, 01/02-Jul-16
8. Regional (North-II) IDR WS @ JNU, New Delhi, 01/02-Sep-16
9. Regional (North-East-II) IDR WS @ NIT, Meghalaya, 23/24-Sep-16
10. Regional (West-II) IDR WS @ IISER, Pune, 05/06-Oct-16
11. National (Medical) IDR WS @ AIIMS, New Delhi, 20/21-Oct-16
12. Regional (Central-I) IDR WS @ NIT, Raipur, 18/19-Nov-16
13. National (Legal) IDR WS @ NUJS, Kolkata, 09/10-Dec-16
14. Regional (East-II, NIT) IDR WS @ NIT, Rourkela, 13/14-Jan-17
15. Regional (Central-II) IDR WS @ ABV-IIITM, Gwalior, 09/10-Feb-17
16. Regional (East-III) IDR WS @ University of Calcutta, Kolkata, 10/11-Mar-17
17. Regional (South-IV) IDR WS @ SPA, Vijayawada, 21/22-Apr-17
18. Regional (West-III) IDR WS @ MNIT, Jaipur, 12/13-May-17
19. Regional (East-IV) IDR WS @ IIT-BHU, Varanasi, 02/03-Jun-17
20. Regional (South-V) IDR WS @ P N Panicker Foundation, Trivandrum, 20/21-Jun-17
21. Regional (North-III) IDR WS @ IIAS, Shimla, 21/22-Sep-17

22. Regional (East-V) IDR WS @ IIT Dhanbad, 24/25-Nov-17
NDL User Workshops

- National VC Address over NKN, 03-Feb-16
- National VC Address over NKN, 26-Sep-16
- Regional (North-I) User WS @ Jamia Millia Islamia, New Delhi, 20-Oct-16
- Regional (South-I) User WS @ Pondicherry, New Delhi, 16-Nov-16
- User WS @ SPOC workshop of NPTEL Local Chapter Colleges of East Zone, IIT Kharagpur, 23-Dec-16
- Interaction with Publishers @ P N Panicker Foundation, Trivandrum, 05-Jan-17
- Lecture @ Training Workshop for Librarians’ @ P N Panicker Foundation, Trivandrum, 06-Jan-17
- eduPreneurship @ GES 2017, 04/05-Feb-17
- Regional (South-II) User WS @ Trivandrum, 20-Jun-17
NDL Events

- ETAL 2015: National Seminar on *Emerging Trends in Academic Libraries* @ IIT Kharagpur, 21-Aug-15
- OSSLM 2016: National Workshop for *Open-Source Software for Library Management* @ IIT Kharagpur, 13/18-Jun-16
- OSSLM 2017: National Workshop for Open-Source Software for Library Management @ IIT Kharagpur, 12/17-Jun-17
- INFLIBNET-IITG-NDL Copyright-DigitalRights-Partners Workshop, Guwahati, 02/04-Mar-18
NDL Participations

- Workshop @ INDEST Meet @ Mohali, 29/30-Apr-15
- ETAL 2015: National Seminar on Emerging Trends in Academic Libraries @ IIT Kharagpur, 21-Aug-15
- ETD 2015 India @ JNU New Delhi, 05/06-Nov-15
- 4th NKN Annual WS @ JNTU Hyderabad, 21/22-Jan-16
- PLANNER 2016 [Embedded WS] @ NEHU, Shillong, 09-Nov-16
- ICDL 2016 [Embedded WS], New Delhi, 13/16-Dec-16
- Digital Archive Inauguration @ Presidency University, 16-Jan-17
- Summer School on Document Analysis: Document Informatics 2017, CEERI, Pilani, 23/28-Jan-17
- National Consultation on the National Mission of Reading @ P N Panicker Foundation, Trivandrum, 01/02-Mar-17
- MZU-ICLIS-2017: International Conference on Library and Information Services in Knowledge Society @ Mizoram University, 01/03-Mar-17
- Consultative Meeting with Europeana Library @ The Hague, The Netherlands, 16-Mar-17
- SpringerNature Metadata Advisory Meeting @ London, UK, 21/23-Mar-17
- Conference on Open Access – The Road to Freedom @ Society for Information Sciences, CSIR-IICB, Kolkata, 07/08-Apr-17
NDL Participations

- CALIBER 2017, 4th Conference on *Re-Envisioning Role of Libraries: Transforming Scholarly Communication*, Anna University, Chennai, 02/04-Aug-17
- mBillonith 2017 Awards, New Delhi, 04-Aug-17
- Ministry of Road Transport & Highways: Workshop on Strategy, Institutional Framework and Action Plan for Transforming Research and Standardization in the Road Sector in India, 11-Aug-17
- Consultative Meeting with FINNA.FI: National Library of Finland @ Helsinki, Finland, 04-Sep-17
- RightsStatements.org, Steering Committee Meeting The Hague, The Netherlands, 07/08-Sep-17
- IPLC 2017: 3rd Indian Public Libraries Conference, New Delhi, 03/05-Oct-17
- IWTPLA : International Workshop cum Training Programme on Library Automation, SRFTI, 13/18-Nov-17
NDLIndia Live:
https://ndl.iitkgp.ac.in/

NDLIndia on Facebook:
https://web.facebook.com/NDLIndia/

NDLIndia on YouTube:
https://www.youtube.com/watch?v=LEwAyHGKeLw
https://www.youtube.com/watch?v=qIZB-G9ywFo
https://www.youtube.com/watch?v=UCoJwfpRQFs&t=115s

NDL Project:
http://www.ndlproject.iitkgp.ac.in/ndl/
Publications


- Items: 10M+
- Metadata: Version 1.0 of Standard Published
- Sources: 149 (IDRs: 100+)
- Registered Users: 2.2M+
- Daily Website Hits: ~12K
- Android App Download: 5L+
- Daily Android / iOS Hits: ~25K
- Registered User Institutions: ~6K
- Languages: 20+
- Learning Resource type: 15+
- Subject domain:
  - Most of the major educational areas (except medical and law)
- Educational Level: School Level (Class-I to XII), UG and PG
Status ...

Nature of Sources: 149 (IDRs: 100+)
- Featured: 7
  - DLI, Shodhganga, Shodhgangotri, Spoken Tutorial, SNLTR, OECD, Satyajit Ray Archives, JEE / GATE Questions & Solutions, South Asia Archives, WeL
- Crawled Repositories: 5
  - NPTEL, Khan Academy, PhET, Project-OSCAR, LibriVox (audio books), PubMed
- Manually-annotated sources: 6
  - NCERT, CBSE, Boards of WB, Tripura, AP, Karnataka, Kerala, Maharashtra
- MARC data from Publishers: 2
  - CRC Press, Springer
- Through API: 1
  - INFLIBNET N-LIST

Upcoming
- Integration Underway
  - IEEE Conference Proceedings
  - Various publishers under eSS
- Exploration
  - UNESCO, Gandhi Heritage Portal, Digital Herbarium (BSI)
Summary

The only thing that you absolutely have to know (may use Google, though), is the URL of NDL:

ndl.iitkgp.ac.in

Rest you find in NDL

Why are you waiting?

- An umbrella over all IRs of India
- User-Centric Design
  - Multi-lingual Indic Interface
  - Multi-faceted Search
  - Multi-modal Filters
  - User Experience Tracking for Personalization
- Rich Set of Contents
  - National Licensing
  - Domain / Usage -focused Verticals
- Metadata Engineering
  - Metadata Standard
  - Open Source Toolkit
- NDLServices
  - Open APIs for 3rd party development
- Platform for Educational Ecosystem where all stakeholders participate, contribute and benefit
- Spearheads NDL Movement

‘The only thing that you absolutely have to know, is the location of the library.’

Albert Einstein