

ADVANCES ON  
INFORMATION  
PROCESSING AND  
MANAGEMENT

## **CONFERENCE ORGANIZERS INSTITUTES**

The International Conference on Integrated Information is supported by the following Institutes:

Emerald Group Publishing Limited  
Technological educational Institute of Athens, Greece  
University of Peloponnese, Greece  
National And Kapodistrian University of Athens, Greece  
Mednet Hellas, The Greek Medical Network  
2<sup>nd</sup> AMICUS Workshop

To learn more about I-DAS, including the Book Series, please visit the webpage  
<http://www.i-das.org/>

# INTEGRATED INFORMATION

International Conference on Integrated Information

Kos, Greece      September, 29 – October, 3 2011

EDITORS

Georgios A. Giannakopoulos  
*Technological Educational Institute of Athens, Greece*

Damianos P. Sakas  
*University of Peloponnese, Greece*

**All papers have been peer-reviewed**



**Piraeus, Greece, 2011**

## Editors

Georgios A. Giannakopoulos

Technological Educational Institute of Athens  
Faculty of Management and Economics  
Department of Library Science and Information Systems  
Address: Aghiou Spyridonos Street, 12210, Egaleo  
E-mail: [gian@teiath.gr](mailto:gian@teiath.gr)

Damianos P. Sakas

University of Peloponnese  
Faculty of Science and Technology  
Department of Computer Science and Technology  
Address: End of Karaiskaki St., 22100, Tripolis, Greece  
E-mail: [D.Sakas@uop.gr](mailto:D.Sakas@uop.gr)

The copyrights will be owned by the authors under the Creative Commons Attribution-Non Commercial license (<http://creativecommons.org/licenses/by-nc/3.0/>), which permits unrestricted use, distribution, and reproduction in any non commercial medium, provided the original work is properly cited.

**ISSN:**

Printed in the Greece, EU

# CONTENTS

<b>PREFACE: Proceedings of the International Conference on Integrated Information (IC-INFO 2011)</b>	<b>1</b>
Georgios A. Giannakopoulos, Damianos P. Sakas	
<b>Conference Details</b>	<b>3</b>
<b>Keynote Speaker</b>	<b>5</b>
<b>SYMPOSIUM ON INFORMATION AND KNOWLEDGE MANAGEMENT</b>	<b>6</b>
Prof. Christos Skourlas	
<b>Towards the Preservation and Availability of Historical Books and Manuscripts: A Case Study</b>	<b>8</b>
Eleni Galiotou	
<b>An Extensive Experimental Study on the Cluster-based Reference set Reduction for Speeding-up the k-nn Classifier</b>	<b>12</b>
Stefanos Ougiaroglou, Georgios Evangelidis and Dimitris A. Dervos	
<b>Exploiting the Search Culture Modulated by the Documentation Retrieval Applications</b>	<b>16</b>
Nikitas N. Karanikolas and Christos Skourlas	
<b>Information and Knowledge Organization: The Case of the TEI of Athens</b>	<b>22</b>
Anastasios Tsolakidis, Manolis Chalaris and Ioannis Chalaris	
<b>Providing Access to Students with Disabilities and Learning Difficulties in Higher Education through a Secure Wireless framework</b>	<b>26</b>
Catherine Marinagi and Christos Skourlas	
<b>Improving Query Efficiency in High Dimensional Point Indexes</b>	<b>30</b>
Evangelos Outsios and Georgios Evangelidis	
<b>Text Segmentation Using Named Entity Recognition and co-Reference Resolution in Greek Texts</b>	<b>34</b>
Pavlina Fragkou	
<b>KINISIS, a Graphical XQuery Language</b>	<b>42</b>
Euclid Keramopoulos, Achilleas Pliakas, Konstantinos Tsekos and Ignatios Deligiannis	
<b>Dimensionality Curse, Concentration Phenomenon and the KDB-tree</b>	<b>46</b>
Nikolaos Kouiroukidis and Georgios Evangelidi	

<b>Applying Balanced Scorecard Strategic Management in Higher Education</b>	<b>50</b>
Manolis Chalaris, Anastasios Tsolakidis and Ioannis Chalaris	
<b>A Web Portal Model for NGOs' Knowledge Management</b>	<b>54</b>
Zuhal Tanrikulu	
<b>The Digital Archives System and Application Optimized for the Tradition Knowledge Archives</b>	<b>58</b>
Jeon Hong. Chan, In Deok. Hwang, Jae Hak. Park, Hyeok. Sim, U won. Gwon and Soon Cheol. Park	
<b>A Semi-automatic Emerging Technology Trend Classifier Using SCOPUS and PATSTAT</b>	<b>62</b>
Seonho Kim, Woondong Yeo, Byong-Youl Coh, Waqas Rasheed, Jaewoo Kang	
<b>Presenting a Framework for Knowledge Management within a Web Enabled Living Lab</b>	<b>66</b>
Lizette de Jager and Albertus AK Buitendag and Potjie (JS) van der Walt	
<b>4TH SYMPOSIUM ON BUSINESS AND MANAGEMENT AND DYNAMIC SIMULATION MODELS SUPPORTING MANAGEMENT STRATEGIES</b>	<b>71</b>
Dr. Damianos Sakas	
<b>New Political Communication Practices: No Budget Events Management. The New Challenge</b>	<b>73</b>
Evangelia N. Markaki, Damianios P. Sakas and Theodore Chadjipantelis	
<b>Free Software – Open Source Software. A Powerful Tool for Developing Creativity in the Hands of the Student</b>	<b>78</b>
Nasiopoulos K. Dimitrios, Damianos P. Sakas, Konstantinos Masselos	
<b>Open Source Web Applications. How it Spread Through the Internet and their Contribution to Education.</b>	<b>82</b>
Nasiopoulos K. Dimitrios, Damianos P. Sakas, Konstantinos Masselos	
<b>Culture in Modern Times in the Frame of Luhmann's System Theory</b>	<b>85</b>
Anastasia J. Chournazidis	
<b>Managing Scientific Journals: A Cultural Viewpoint</b>	<b>87</b>
Marina C. Terzi, Damianos P. Sakas, and Ioannis Seimenis	
<b>A Conceptual Framework for Analyzing Knowledge-based Entrepreneurship</b>	<b>92</b>
Nikos S. Kanellos	

<b>SESSION ON INFORMATION HISTORY: PERSPECTIVES, METHODS AND CURRENT TOPICS</b>	<b>96</b>
Prof. Laszlo Karvalics	
<b>Emerging Research Fields in Information History</b>	<b>98</b>
Laszlo Z. Karvalics	
<b>Information Management through Elementary Data Clusters: New Observations on Pridianum-Type Roman Statistical Documents</b>	<b>102</b>
Gergő Gellérfi	
<b>Information and Secrecy on the Silk Road. Methods of Encryption of Legal Documents in Inner Asia (3th-4th century)</b>	<b>106</b>
Szabolcs Felföldi	
<b>The Role of Information and Disinformation in the Establishment of the Mongolian Empire: A Re-examination of the 13th century Mongolian History from the Viewpoint of Information History</b>	<b>110</b>
Márton Gergő Vér	
<b>Early Warning Systems and the Hospitallers in the Eastern Mediterranean</b>	<b>114</b>
Zsolt Hunyadi	
<b>Information Management as Establishment Dutch Navigational Knowledge on Japan, 1608-1641</b>	<b>118</b>
Gabor Szommer	
<b>Files Everywhere - Register and Training of Men for Military and Civil Purpose in Prussia in the early 18th century</b>	<b>123</b>
Marton Holczer	
<b>SYMPOSIUM ON INTEGRATED INFORMATION: THEORY, POLICIES, TOOLS</b>	<b>126</b>
Prof. Georgios Giannakopoulos	
<b>Approaching Information as an Integrated Field: Educating Information Professionals</b>	<b>128</b>
Georgios Giannakopoulos, Daphne Kyriaki Manesi and Stryidon Zervos	
<b>Special Libraries as Knowledge Management Centers</b>	<b>132</b>
Eva Semertzaki	
<b>Digital Libraries' Developers and their Suitability: A Case Study</b>	<b>136</b>
Maria Monopoli	

<b>A Preliminary Study for the Creation of a Greek Citation index in the Humanities and the Social Sciences (GCI – H&amp;SS)</b>	<b>140</b>
Daphne Kyriaki-Manessi and Evi Sachini	
<b>Archiving as an Information Science. Evidence from a Survey Carried out on a Sample of Greek Students</b>	<b>144</b>
Georgios Giannakopoulos and Ioannis Koumantakis	
<b>Transition Process of E-records Management and Archiving System in Universities: Ankara University</b>	<b>147</b>
S. Özlem Bayram and Fahrettin Ozdemirci	
<b>Government Information: Access and Greece's Efforts for Access</b>	<b>150</b>
Aikaterini Yiannoukakou	
<b>School Archives and their Potentials in Teaching: Aspects of Greek Reality</b>	<b>156</b>
Sonia Geladaki and Panagiota Papadimitriou	
<b>Research on School Libraries in Greece and Suggestions on its Further Development</b>	<b>160</b>
Georgios D. Bikos	
<b>Building Digital Collections for Archeological Sites: Metadata Requirements and CIDOC CRM Extension</b>	<b>164</b>
Georgios S. Gkrous and Mara Nikolaidou	
<b>Museological Claims to Autonomous Knowledge: Rethinking the Conceptual Mode of Display and its Claims to Knowledge</b>	<b>169</b>
Assimina Kaniari and Georgios Giannakopoulos	
<b>Use of Library Loan Records for Book Recommendation</b>	<b>172</b>
Keita Tsuji, Erika Kuroo, Sho Sato, Ui Ikeuchi, Atsushi Ikeuchi, Fuyuki Yoshikane and Hiroshi Itsumura	
<b>Developing a National Database on Librarianship and Information Science. The Case of E-VIVA, the Hellenic Fulltext Database</b>	<b>176</b>
Filippos Ch. Tsimpoglou, Vasiliki V. Koukounidou and Eleni K. Sakka	
<b>Integrated Access to Cultural Heritage Information Pieces in Iran Astan-Quds Razavi's Organization of Libraries, Museums and Documents Center: A Theory of Unionization Disparate Information Assets over Imam Reza's Zarih</b>	<b>181</b>
Ms. Mitra Zarei and Ms. Maliheh Farrokhnia	
<b>Attitudes of University Librarians and Information Scientists towards the Draft Code of</b>	<b>185</b>



<b>Library Ethics to Present a Model for Final Library Ethical Codes</b>	
Mahsoomeh Latifi, Fatemeh Zandian and Hasan Siamian	
<b>SESSION ON OPEN ACCESS REPOSITORIES: SELF-ARCHIVING, METADATA, CONTENT POLICIES, USAGE</b>	<b>188</b>
Dr. Alexandros Koulouris	
<b>Geographical Collections in Greek Academic Libraries: Current Situation and Perspectives</b>	<b>189</b>
Ifigenia Vardakosta and Sarantos Kapidakis	
<b>Information Seeking Behavior: Factors that Affect the Behavior of Greek Astronomers</b>	<b>194</b>
Hara Brindesi and Sarantos Kapidakis	
<b>Aggregating Metadata for Europeana: The Greek Paradigm</b>	<b>198</b>
Alexandros Koulouris, Vangelis Banos and Emmanouel Garoufallou	
<b>Integrating a Repository with Research Output and Publications: The Case of the National Technical University of Athens</b>	<b>202</b>
Dionysis Kokkinos	
<b>Implementation of Workflows as Finite State Machines in a National Doctoral Dissertations Archive</b>	<b>205</b>
Nikos Houssos, Dimitris Zavaliadis, Kostas Stamatis and Panagiotis Stathopoulos	
<b>Practices of “Local” Repositories of Legally Protected Immovable Monuments. A Global Scheme for ‘Designation – Significance’ Information</b>	<b>209</b>
Michail Agathos and Sarantos Kapidakis	
<b>Integration of Metadata in BWMETA-2.0.0 Format</b>	<b>213</b>
Katarzyna Zamlynska, Jakub Jurkiewicz and Lukasz Bolikowski	
<b>SESSION ON EVIDENCE-BASED INFORMATION IN CLINICAL PRACTICE</b>	<b>216</b>
Dr. Evangelia Lappa	
<b>Applicability of Data Mining Algorithms on Clinical Datasets</b>	<b>218</b>
Wilfred, Bonney	
<b>Changing Roles of Health Librarians with Open Access Repositories</b>	<b>221</b>
Christine Urquhar and Assimina Vlachaki	
<b>From Medical Records to Health Knowledge Management Systems: The Coding to Health Sector</b>	<b>225</b>
Evangelia C. Lappa and Georgios A. Giannakopoulos	

<b>The Survey of Skill, Attitude and Use of Computer and Internet among Faculty Members</b>	<b>229</b>
Hasan Siamian, Azita Bala Ghafari, Kobra Aligolbandi, Mohammad Vahedi and Gholam Ali Golafshani Jooybari	
<b>Trends in Scholarly Communication among Biomedical Scientists in Greece</b>	<b>232</b>
Assimina Vlachaki and Christine Urquhart	
<b>SESSION ON ELECTRONIC PUBLISHING: A DEVELOPING LANDSCAPE</b>	<b>236</b>
Dr. Dimitris Kouis	
<b>E-Journal and Open Access Journal Publishing in the Humanities: Preliminary Results from a Survey among Byzantine Studies Scholars</b>	<b>238</b>
Victoria Tsoukala and Evi Sachini	
<b>Preliminary Results on a Printed VS Electronic Text Books Assessment Through Questionnaire</b>	<b>242</b>
Dimitrios A. Kouis and Kanella Pouli	
<b>An Interpretation of Aristotelian Logic According to George Boole</b>	<b>246</b>
Markos N. Dendrinis	
<b>SESSION ON INFORMATION CONTENT PRESERVATION AS OUTCOME OF CONSERVATION OF CULTURAL HERITAGE: ETHICS, METHODOLOGY AND TOOLS</b>	<b>251</b>
Prof. George Panagiaris and Dr. Spiros Zervos	
<b>Intrinsic Data Obfuscation as the Result of Book and Paper Conservation Interventions</b>	<b>254</b>
Spiros Zervos, Alexandros Koulouris and Georgios Giannakopoulos	
<b>Mass Deacidification: Preserving More than Written Information</b>	<b>258</b>
Michael Ramin, Evelyn Eisenhauer and Markus Reist	
<b>Information Literacy of Library Users: A Case Study of Mazandaran Public Library Users, Iran</b>	<b>260</b>
Hussein Mahdizadeh and Hasan Siamian	
<b>The Narratives of Paper in The Archives of the New Independent Greek State (Mid 19th c.)</b>	<b>264</b>
Ourania Kanakari and Maria Giannikou	
<b>From Macro to Micro and from Micro to Nano: The Evolution of the Information Content Preservation of Biological Wet Specimen Collections</b>	<b>268</b>
Nikolaos Maniatis and Georgios Panagiaris	

<b>Digital images: A valuable scholar's tool or misleading material?</b>	<b>272</b>
Patricia Engel	
<b>Attitudes of University Librarians and Information Scientists Towards the Draft Code of Library Ethics to Present a Model for Final Library Ethical Codes</b>	<b>277</b>
Mahsoomeh Latifi, Fatemeh Zandianand and Hasan Siamian	
<b>Investigation of the Degradation Mechanisms of Organic Materials: From Accelerated Ageing to Chemometric Studies</b>	<b>280</b>
Ekaterini Malea, Effie Papageorgiou and Georgios Panagiaris	
<b>SESSION ON DIVERGENCE AND CONVERGENCE: INFORMATION WORK IN DIGITAL CULTURAL MEMORY INSTITUTIONS</b>	<b>285</b>
Dr. Susan Myburgh	
<b>Extending Convergence and Divergence in Cultural Memory Institutions: The Old Slave Lodge in the New South Africa</b>	<b>287</b>
Archie L Dick	
<b>The Transfer of Knowledge from Large Organizations to Small: Experiences from a Research Project on Digitization in Wales</b>	<b>289</b>
Clare Wood-Fisher, Richard Gough, Sarah Higgins, Menna Morgan, Amy Staniforth and Lucy Tedd	
<b>The Usage of Reference Management Software (Rms) in an Academic Environment : A Survey at Tallinn University</b>	<b>293</b>
Enrico Francese	
<b>Varialog : How to Locate Words in a French Renaissance Virtual Library</b>	<b>297</b>
Marie-Hélène Lay	
<b>The Urge to Merge: A Theoretical Approach</b>	<b>301</b>
Susan Myburgh	
<b>SYMPOSIUM ON ADVANCES INFORMATION FOR STRATEGIC MANAGEMENT</b>	<b>304</b>
Professor Nikolaos Konstantopoulos	
<b>Empowerment in the Tax Office of Greece</b>	<b>306</b>
Antonios E. Giokas and Nikolaos P. Antonakas	
<b>Building Absorptive Capacity Through Internal Corporate Venturing</b>	<b>310</b>
Ioannis M. Sotiriou and Alexandros I. Alexandrakis	

<b>The Monitoring Information System (M.I.S.) - An information and Management System for Projects Co-financed Under the National Strategic Reference Framework (NSRF) and the Community support framework (CSF)</b>	<b>314</b>
Catherina G. Siampou, Eleni G. Fassou and Athanassios P. Panagiotopoulos	
<b>Corruption in Tax Administration: The Entrepreneurs View Point</b>	<b>318</b>
Nikolaos P. Antonakas, Antonios E. Giokas and Nikolaos Konstantopoulos	
<b>Conflicts between the IT Manager and the Software House after the Strategic Choice of Outsourcing of the Information Processes in Maritime Companies.</b>	<b>322</b>
Anthi Z. Vaxevanou, Nikolaos Konstantopoulos, Damianos P. Sakas	
<b>Contemporary Forms of Ordering Between the Supply Department and Ship Chandler Companies in the Shipping Industry</b>	<b>325</b>
Anthi Z. Vaxevanou, Nikolaos Konstantopoulos, Damianos P. Sakas	
<b>Strategies Implemented and Sources Used for the Acquisition of Information on Foreign Markets</b>	<b>329</b>
Myropi Garri, Nikolaos Konstantopoulos and Michail G. Bekiaris	
<b>The Effect of High Performance Working Systems on Informative Technology in Enterprises after Organisation Changes such as Mergers &amp; Acquisitions</b>	<b>333</b>
Nikolaos Konstantopoulos and Yiannis Triantafyllopoulos	
<b>Personnel's Absorptive Capacity as a Guiding Concept for Effective Performance in Informative Technology</b>	<b>337</b>
Nikolaos Konstantopoulos and Yiannis Triantafyllopoulos	
<b>SESSION ON CONTEMPORARY ISSUES IN MANAGEMENT: ORGANISATIONAL BEHAVIOUR, INFORMATION TECHNOLOG, EDUCATION &amp; HOSPITAL LEADERSHIP</b>	<b>341</b>
Dr. Panagiotis Trivellas	
<b>Investigating the Importance of Sustainable Development for Hotel SMES</b>	<b>343</b>
Panagiotis Reklitis and Anestis Fotiadis	
<b>Strategic Alignment of ERP, CRM and E-business: A Value Creation</b>	<b>347</b>
Catherine C. Marinagi and Christos K. Akrivos	
<b>The Impact of Occupational Stress on Performance in Health Care</b>	<b>351</b>
Panagiotis Trivellas Panagiotis Reklitis and Charalambos Platis	

<b>The Impact of Emotional Intelligence on Job Outcomes and Turnover Intention in Health Care</b>	<b>356</b>
Panagiotis Trivellas Vassilis Gerogiannis and Sofia Svarna	
<b>SYMPOSIUM ON BUSINESS MANAGEMENT AND COMMUNICATION STRATEGIES SUPPORTING DECISION MAKING PROCESS IN TOURISM SECTOR</b>	<b>360</b>
Dr. Panagiota Dionysopoulou	
<b>The Human Factor as a Mediator to the Total Quality in the Tourism Companies. The impact of Employees' Motivation to Quality Improvements</b>	<b>362</b>
Christos K. Akrivos and Panagiotis Reklitis	
<b>Tourist Destination Marketing and Management Using Advanced ICTS Technologies</b>	<b>365</b>
Anastasia Argyropoulou, Panagiota Dionyssopoulou, Georgios Miaoulis	
<b>G.N.T.O. (Greek National Tourism Organization) Communication Strategy in Advertising Campaigns 1991-2006</b>	<b>370</b>
George Stafylakis and Panagiota Dionyssopoulou	
<b>GENERAL PAPERS</b>	<b>375</b>
<b>The role of Environmental Education within the Framework of the Environmental Policy of a Regional Municipality</b>	<b>376</b>
Vassiliki Delitheou and Dimitra Thanasia	
<b>Issues of Social Cohesion: A case study from the Greek Urban Scenery</b>	<b>380</b>
Evgenia Tousi	
<b>Merging Activity and Employee Performance: The Greek Banking System</b>	<b>384</b>
Panagiotis Liargovas and Spyridon Repousis	
<b>Sustainable Development and Corporate Social Responsibility in Higher Education: Some Evidence from Greece</b>	<b>387</b>
Anastasios Sepetis and Fotios Rizos	
<b>Exploring the Effects of Organizational Culture on Collaborative vs. Competitive Knowledge Sharing Behaviors</b>	<b>395</b>
Hanan Abdulla Mohammed Al Mehairi and Norhayati Zakaria	

# **Preface: Proceedings of the International Conference on Integrated Information (IC-ININFO 2011)**

GEORGIOS A. GIANNAKOPOULOS

*Department of Library Science and Information Systems, Technological Educational Institute of Athens, Aghiou Spyridonos, Egaleo, 12210, Greece*

DAMIANOS P. SAKAS

*Department of Computer and Technology Science, University of Peloponnese, Praxitelous 89-91, Piraeus, 18532, Greece*

## **Aims and Scope of the Conference**

The International Conference on Integrated Information 2011 took place in Kos Island, Greece, between September, 29 and October, 3, 2011. IC-ININFO is an international interdisciplinary conference covering research and development in the field of information management and integration.

The conference aims at creating a forum for further discussion for an Integrated Information Field incorporating a series of issues and/or related organizations that manage information in their everyday operations. Therefore, the call for papers is addressed to scholars and/ or professionals of the fields of Library and Archives Science (including digital libraries and electronic archives), Museum and Gallery Studies, Information Science, Documentation, Information Management, Records Management, Knowledge Management, Data management and Copyright experts the latter with an emphasis on Electronic Publications. Furthermore, papers focusing on issues of Cultural Heritage Management and Conservation Management are also be welcomed along with papers regarding the Management of Nonprofit Organizations such as libraries, archives and museums.

One of the primary objectives of the IC-ININFO will be the investigation of information-based managerial change in organizations. Driven by the fast-paced advances in the Information field, this change is characterized in terms of its impact on organizations that manage information in their everyday operations.

Grouping emerging technologies in the Information field together in a close examination of practices, problems and trends, IC-ININFO and its emphases on integration and management will present the state of the art in the field. Addressed jointly to the academic and practitioner, it will provide a forum for a number of perspectives based on either theoretical analyses or empirical case studies that will foster dialogue and exchange of ideas.

## **Topics of general Interest**

Library Science, Archives Science, Museum and Gallery Studies, Information Science, Documentation, Digital Libraries, Electronic Archives, Information Management, Records / Document Management, Knowledge Management, Data Management, Copyright, Electronic Publications, Cultural Heritage Management, Conservation Management, Management of Nonprofit Organizations, History of Information, History of Collections, Health Information

## **Symposia**

The Conference offered a number of sessions under its patronage, providing a concise overview of the most current issues and hands-on experience in information-related fields.

- Symposium on Integrated information: Theory, Policies, Tools
- 4th Symposium on Business and Management and Dynamic Simulation Models supporting management strategies

- Session on Open Access Repositories: Self-archiving, Metadata, Content policies, Usage
- Session on Evidence-Based Information in Clinical Practice
- Session on Business Management and Communication Strategies supporting Decision Making Process in Tourism Sector
- Session on Electronic Publishing: A Developing Landscape
- Session on Information and Knowledge Management
- Session on Information Content Preservation as Outcome of Conservation of Cultural Heritage: Ethics, Methodology and Tools
- Session on Advances Information for Strategic Management
- Session on Information History: Perspectives, Methods and Current Topics
- Session on Divergence and Convergence: Information Work in Digital Cultural Memory Institutions
- Session on Contemporary issues in Management: Organisational Behaviour, Information Technology, Education & Hospital leadership.

The wide range of aspects that the sessions covered, highlighted future trends in the Information Science.

### **Paper Peer Review**

More than 300 papers had been submitted for consideration in IC-ININFO 2011. From them, 91 were selected for presentation, after peer review in a double blind review process. The accepted papers were presented at IC-ININFO 2011.

### **Thanks**

We would like to thank all members that participated in any way in the IC-ININFO 2011 Conference and especially:

- The famous publishing house Emerald for its communication sponsorship.
- The co-organizing Universities and Institutes for their support and development of a high-quality Conference scientific level and profile.
- The members of the Scientific Committee that honored the Conference with their presence and provided a significant contribution to the review of papers as well as for their indications for the improvement of the Conference.
- All members of the Organizing Committee for their help, support and spirit participation before, during and after the Conference.
- The Session Organizers for their willing to organize sessions of high importance and for their editorial work, contributing in the development of valued services to the Conference.
- PhDC Marina Terzi for her excellent editorial work, contributing in the production of the Conference proceedings.

## CONFERENCE DETAILS

### Chairs

Georgios A. Giannakopoulos, Technological Educational Institute of Athens, Greece  
Damianos P. Sakas, University of Peloponnese, Greece

### Co-Chairs

Daphne Kyriaki – Manesi, Technological Educational Institute of Athens, Greece  
Dimitrios Vlachos, University of Peloponnese, Greece

### Scientific Committee

Amanda Spink, Queensland University of Technology  
Andreas Bagias, European Court  
Andreas Rauber, Vienna University of Technology  
Astrid van Wesenbeeck, SPARC Europe  
Christine Urquhart, Aberystwyth University  
Christos Schizas, University of Cyprus  
Christos Skourlas, Technological Educational Institute of Athens  
Claire Farago, University of Colorado at Boulder  
Claus-Peter Klas, FernUniversität in Hagen  
Costas Vassilakis, University of Peloponnese,  
Dimitris Dervos, Technological Educational Institute of Thessaloniki  
Eelco Ferwerda, OAPEN  
Elena Garcia Barriocanal, University of Alcalá  
Emmanuel Garoufallou, Technological Educational Institute of Thessaloniki  
Filippos Tsimpoglou, University of Cyprus  
Fillia Makedon, University of Texas at Arlington  
George Korres, University of Newcastle  
Georgios Evangelidis, University of Macedonia  
Georgios Panagiaris, Technological Educational Institute of Athens  
Johan Oomen, Netherlands Institute for Sound and Vision  
José Aldana, University of Malaga  
Konstantinos Masselos, University of Peloponnese  
Luciana Duranti, The University of British Columbia  
Markos N. Dendrinis, Technological Institute of Athens  
Milena Dobрева, University of Strathclyde  
Prodromos Tsiavos, London School of Economics and Political Science  
Sándor Darányi, University of Borås  
Sarantos Kapidakis, Ionian University  
Sirje Virkus, Tallinn University  
Spiros Zervos, Technological Educational Institute of Athens  
Susan Myburgh, University of South Australia  
Theodoros Pitsios, University of Athens, Faculty of Medicine

### Organizing Committee

Alexandros Koulouris (Chair), Technological Educational Institute of Athens  
Christos Christopoulos, SCEV Scientific Events Ltd  
Marina Terzi, University of the Aegean, Greece  
Evangelia Markaki, Aristotle University of Thessaloniki



Assimina Kaniari, Athens School of Fine Arts  
Evangelia Lappa, General Hospital Attikis K.A.T.  
Dimitris Kouis, Greek Ministry of Education, Lifelong Learning and Religious Affairs  
Dionysis Kokkinos, National Technical University of Athens

## KEYNOTE SPEAKER



Professor Amanda Spink

Professor Amanda Spink has published over 340 scholarly journal articles, refereed conference papers and book chapters, and 6 books. Many of her journal articles are published in the Journal of the American Society for Information Science and Technology, Information Processing and Management, and the Journal of Documentation. She is Editor of the Emerald journal Aslib Proceedings. Amanda's research has been published at many conferences including ASIST, IEEE ITCC, CAIS, Internet Computing, ACM SIGIR, and ISIC Conferences. Her recent books include Information Behavior: An Evolutionary Instinct and Web Search: Multidisciplinary Perspectives, both published by Springer. Amanda's research focuses on theoretical and empirical studies of information behavior, including the evolutionary and developmental foundations. The National Science Foundation, the American Library Association, Andrew R. Mellon Foundation, Amazon.com, Vivisimo. Com, Infospace.com, NEC, IBM, Excite.com, AlltheWeb.com, AltaVista.com, FAST, and Lockheed Martin have sponsored her research. In 2008 Professor Spink had the second highest H-index citation score in her field from 1998 to 2008 [Norris, M. (2008)]. Ranking Fellow Scholars and their H-Index: Preliminary Survey Results. Loughborough University, Dept of Information Science Report].

# Mass Deacidification: Preserving more than Written Information

Michael Ramin<sup>†</sup>, Evelyn Eisenhauer<sup>‡</sup> and Markus Reist<sup>‡</sup>

<sup>†</sup> *Research & Analytics, Nitrochemie Wimmis, Niesenstrasse 44, 3752 Wimmis, Switzerland.  
michael.ramin (at) nitrochemie.com*

<sup>‡</sup> *Papersave swiss, Nitrochemie Wimmis, Niesenstrasse 44, 3752 Wimmis, Switzerland.  
evelyn.eisenhauer (at) nitrochemie.com, markus.reist (at) nitrochemie.com*

**Abstract:** A vast number of books and archive materials worldwide are threatened by acid decay or ink corrosion. Till now, many investigations demonstrated the effectiveness of mass deacidification to stop the deterioration process. Different quality standards guarantee the safety for the original items and allow after the long experience of ten years in operation more conclusive evaluations than measurements based on artificial ageing. Diverse mechanical properties were examined, and with sophisticated methods it could be shown that the neutralization compound was totally penetrating the treated papers in a solvent based mass process. Besides deacidification, a magnesium-titanium based process is also suitable for a gentle treatment of papers threatened or even damaged by ink corrosion.

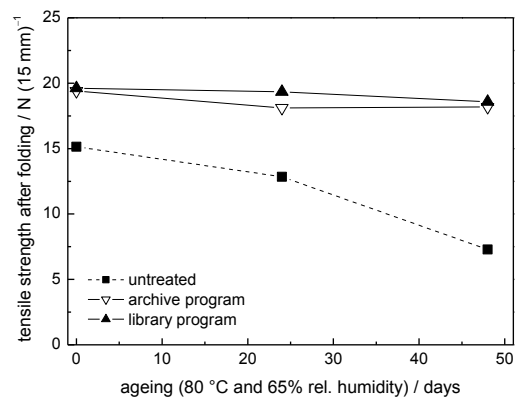
**Keywords:** Paper conservation, Mass Deacidification, Quality standards, Papersave Swiss Treatment.

## I. INTRODUCTION

Today digitalization is on everyone's lips. However, preservation of the cultural heritage is more than digitalization of the information and scans or photographs of original items. Books and archive materials can tell us the story beyond the written information, about the person who manufactured the book, techniques in production of parchment, paper, cardboard, the organization of human knowledge and even fashion trends can be found (Grossenbacher, 2006). Unfortunately, a total of two thirds of all historically and culturally significant books and archive materials worldwide are threatened by acid decay or ink corrosion. To preserve such originals in the long run adequate conservation processes are required. After ten years in operation mass deacidification processes proofed their suitability and efficiency in stopping the acid caused paper decay by neutralizing the acids and building up an alkaline reserve. Comparative studies showed the effectiveness of the mass deacidification processes (Ramin *et al.*, 2009). Recently, further European studies in mass processes confirmed the successful neutralization of the acids in books and acknowledged the long experience of ten years in operation that provide analytically more conclusive evaluations compared to studies based on artificial ageing. Additionally, a process based on magnesium and titanium ethoxide demonstrated the suitability to treat ink corrosion (Effner, 2008).

## II. OUTLINE

A consistent quality control creates the prerequisites for conclusive studies. In Switzerland the quality standards of the Swiss National Library and the Swiss Federal Archive are applied<sup>89</sup>. Besides surface pH measurements the Swiss quality standards include the analysis of the alkaline uptake by XRF measurements, the homogeneity of the treatment, and color measurements. Over the ten past years a lot of data has been generated that successfully demonstrates the effectiveness of mass deacidification processes and the high quality involved.



**Figure 1.** Tensile strength after Bansa-Hofer folding [6] against accelerated ageing.

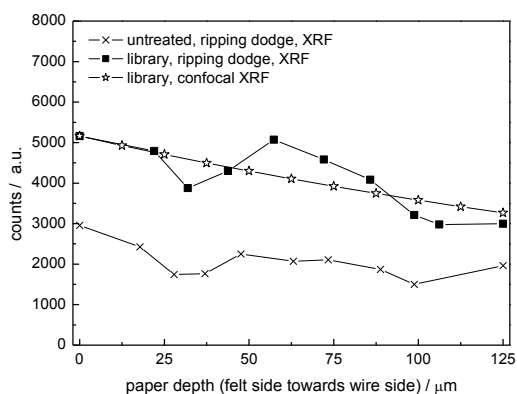
Whereas the swiss quality checks are performed with the test books and the original materials, the German recommendation for quality management in preservation refrains measurements on original items but yet sets standards for a general process control) Hofmann and Wiesner, 2007). Exactly defined test paper has to be included in the treatment process to deliver relevant parameters on tensile strength, measured after Bansa-Hofer folding (Bansa and Hofer, 1980), and artificial ageing. Fig. 1 shows the strengthening effect of the papersave swiss treatment immediately after the process and the long-term effect on the paper usability. In further investigations different mechanical tests with and without ageing demonstrated

<sup>89</sup> Quality standards for the deacidification by the Papersave Swiss process, [http://www.nb.admin.ch/nb\\_professionnel/erhalten/00699/01491/01492/index.html?lang=en](http://www.nb.admin.ch/nb_professionnel/erhalten/00699/01491/01492/index.html?lang=en)

again the effectiveness of mass deacidification processes (Ramin *et al.*, 2009).

Fig. 2 displays the magnesium distribution crosswise through a sheet of paper. In a solvent-based process, the active neutralization compound is equally distributed and thus able to neutralize the acids in a sustainable manner.

Recent work (Effner, 2008) revealed the suitability of a solvent process based on magnesium and titanium ethoxide to treat ink corrosion. The advantages were the immobilization of the iron ions, and the absence of mechanical stress, as no swelling occurred. The surface character and the morphological structure of the historical inks have not changed.



**Figure 2.** Comparison of the magnesium content of treated paper with the paper depth, measured by 3D-micro-XRF (asterisk) and normal XRF (squares). The magnesium content of untreated paper, analyzed by XRF, is depicted with crosses. For clarity, the signals of the 3D-micro-XRF are collated with the counts of the standard XRF for the felt side surface.

A vast number of good reasons to apply a mass deacidification process but yet digitalization is on everyone's lips. No doubt digitalization allows immediate public access to written information. However, mass deacidification is the only process to preserve the original cultural heritage!

## REFERENCES

- [Bansa, H. and H.H. Hofer, "Die Beschreibung der Benutzbarkeitsqualität gealterter Papiere in Bibliotheken und Archiven," \*Das Papier\*, 34\(8\): 348-355 \(1980\).](#)
- [Effner, C., Einfluss der Mengenentsäuerung \(Papersave Swiss Verfahren\) auf tintenfrassgeschädigtes Papier, Diploma thesis, Bern University of the arts \(2008\).](#)
- [Grossenbacher, G., "Paper deacidification as a measure for preserving originals," In: Blüher, A. and Grossenbacher, G. \(eds.\) \*Save Paper!. Papers given at the International Conference Save Paper, 15-17 February 2006, Swiss National Library, Bern \(2006\).\*](#)

[Hofmann, R and H.-J. Wiesner, \*Bestandserhaltung in Archiven und Bibliotheken\*, 1st edition, DIN Deutsches Institut für Normung, Berlin \(2007\).](#)

[Ramin, M., H. Andres, A. Blüher, M. Reist and M. Wälchli, "Paper De-acidification: A comparative Study," \*Journal of Paper Conservation\*, 10\(3\): 17-25 \(2009\).](#)