



E-MRS Spring Meeting 2001
June 5 - 8, 2001

SYMPOSIUM K

CELLULOSE AND PAPER DETERIORATION

Symposium Organizers:

J.B.G.A. Havermans, TNO Industrial Technology, Delft, The Netherlands

Andrzej Baranski, Jagiellonian University, Krakow, Poland

Tom Lindström, Royal Institute of Technology, Stockholm, Sweden

Franciska Sundholm, University of Helsinki, Finland

Symposium Support :

ZFB Zentrum für Bucherhaltung GmbH, Germany

E-MRS 2001 SPRING MEETING

SYMPOSIUM K

Tuesday, June 5, 2001

Mardi 5 juin 2001

09:30 **OPENING SESSION**

10:15 Introduction to Symposium K
OVERVIEW OF THE RESEARCH ON AGEING OF PAPER, John Havermans, TNO Industrial Technology, The Netherlands

Session I

Chair : **Franciska Sundholm**

K-I.1 10:30 ASTM PAPER AGING RESEARCH PROGRAM, R.B. Arnold, Associates, Inc., 12 East Barnard Street, West Chester PA 19382, USA

11:00 **BREAK**

K-I.2 11:30 OVERVIEW OF DEGRADATION MECHANISMS OF CELLULOSE, John E. Kennedy, Birmingham Carbohydrate and Protein Technology Group, University of Birmingham Research Park, Vincent Drive, Birmingham B15 2SQ, U.K.

K-I.3 12:15 AGEING KINETICS, A. Baranski, Dept. of Chemistry and Regional Laboratory for Physico-Chemical Analyses and Structural Research, Jagiellonian University, Ingardena 3, 30-060 Kraków, Poland

13:00 **LUNCH**

Session II

Chair : **John Havermans, The Netherlands**

K-II.1 14:30 ARTIFICIAL AGING: A MUST OR A MYTH?, Henk J. Porck, Koninklijke Bibliotheek, National Library of the Netherlands, P.O. Box 90407, 2509 LK The Hague, The Netherlands

K-II.2 15:00 USEFULL FINDINGS FOR CONSERVATION MEASURES AND METHODS OF ACCELERATED AGEING, Manfred Anders, ZFB Zentrum für Bucherhaltung GmbH, Leipzig, Germany

15:30 **BREAK**

K-II.3 16:00 THE EFFECT OF ACCELERATED AGEING ON GRAPHIC PAPERBOARDS DEGRADATION, Meta Cernic Letnar, B. Sc., Pulp and Paper Institute Ljubljana, Slovenia, Vesna Kropar Vancina, Faculty of Graphic Arts Zagreb, Croatia

K-II.4 16:30 ASTM/ISR RESEARCH PROGRAM ON THE EFFECTS OF AGEING ON PRINTING AND WRITING PAPERS: THERMAL ACCELERATED AGEING TEST METHOD DEVELOPMENT, P.L. Bégin and E. Kaminska, Canadian Conservation Institute, 1030 Innes Road, Ottawa, K1A 0M3, Canada

17:00 DISCUSSIONS and ending remarks of the chair

Wednesday, June 6, 2001

Mercredi 6 juin 2001

Session III Air pollutants and ageing of paper
Chair Andzej Baranski, Poland

- K-III.1** 14:30 THE IMPACT OF EUROPEAN RESEARCH ON AIR POLLUTANTS AND THE AGEING OF PAPER, John Havermans, The Netherlands. Based on: EFFECTS OF AIR POLLUTANT ON THE ACCELERATED AGEING OF CELLULOSE-BASED MATERIALS 'PAPER', John Havermans(1), Petter Kolseth(2), Françoise Flieder(3), Oliver Lindqvist(4), (1)TNO Industrial Technology, Netherlands, (2)Previously STFI, Sweden, (3)CRCDG, France, (4) Göteborg University, Sweden
- K-III.2** 15:00 EFFECTS OF AIR POLLUTANT ON THE AGEING OF PAPER, Anna Johansson, Department of Chemistry, Division of Inorganic Chemistry, 412 96 Göteborg, Sweden
- 15:45 DISCUSSION
- 16:00 **BREAK**
- K-III.3** 16:30 THE BEHAVIOUR OF PAPER TRATED IN CARBON DIOXIDE MODIFIED ATMOSPHERE, Valeria I. Kobiakova, Svetlana A. Dobrusina, Federal Document Conservation Center, 18 Sadovaya st., 191069 St. Petersburg, Russia
- K-III.4** 17:00 CHARACTERIZATION OF VOLATILE COMPOUNDS FORMED THROUGH DYNAMIC AGING OF PAPER, Ulrike Binder, Thorsten Doering, Peter Fischer, Joachim Liers, Gerhard Banik, State Academy of Art and Design Stuttgart, Paper Conservation, Höhenstr. 16, 70736 Fellbach, Germany
- 17:30 DISCUSSION and ending remarks of the chair

Thursday, June 7, 2001

Jeudi 7 juin 2001

Session IV Analyses and Conservation measures

Chair : Tom Lindstrom, Sweden

- K-IV.1** 09:00 VACUUM ARC DEPOSITION OF DECORATIVE AND PROTECTIVE COATINGS ON PAPER AND WOOD, B. Straumal(1), N. Vershinin(1), A. Sanchez Bolinches(2), (1)I.V.T. Ltd. (Institute for Vacuum Technology), P.O. Box 47, 109180 Moscow, Russia, (2)Departamento de Ingenieria Mecanica y de Materiales, Universidad Politecnica de Valencia, Camino de Vera, s/n, Apt. Correos 22012, 46022 Valencia, Spain
- K-IV.2** 09:30 STUDY OF Ca(OH)₂/MC-60 STRENGTHENING-NEUTRALISATION METHOD, Franciska Sundholm (1), Maijlis Bremer-Laamanen (2), Ulla Knuutinen (3), Maria Tahvanainen(1), (1)Helsinki University, Laboratory of Polymer Chemistry, (2)Helsinki University Library, Microfilming and Conservation Department, (3)EVITech Institute of Art and Design, Conservation Department
- K-IV.3** 10:00 FTIR DIFFUSE REFLECTOMETRY APPLIED ON PAPER DAMAGED BY IRON GALL INK, C. Rémazeilles, V. Quillet, J. Bernard, Laboratoire d'Etude des Matériaux en Milieux Agressifs, Université de La Rochelle, avenue Michel Crépeau, 17042 La Rochelle Cedex, France
- 10:30 DISCUSSION
- 11:00 **BREAK**
- K-IV.4** 11:30 CHEMILUMINESCENCE — A NOVEL TOOL IN CELLULOSE DEGRADATION STUDIES, Matija Strlic, University of Ljubljana, Faculty of Chemistry and Chemical Technology, Ljubljana, Slovenia
- K-IV.5** 12:15 THE DISTRIBUTION OF MASS DEACIDIFICATION AGENTS IN PAPER STUDIED BY XPS, PIXE AND PIGE, Petra Rudolf(1), Beatrice Marino(2), Catherine Tamigniau(1), Joseph Riga(1), Pierre Louette(1), Carlo Coluzza(2), Giovanni Gigante(2) and Guy Demortier(1), (1)Institute of Studies in Interface Sciences, Facultés Universitaires Notre-Dame de la Paix, Rue de Bruxelles 61, 5000 Namur, Belgium, (2)Dipartimento di Fisica, Università degli Studi di Roma "La Sapienza", P.le Aldo Moro 2, 00185 Roma, Italy
- K-IV.6** 12:45 POLARIZED-ATR-FTIR CHARACTERISATION OF CELLULOSIC FIBRES IN HISTORIC ARTEFACT, Paul Garside and Paul Wyeth Department of Chemistry and the Textile Conservation Centre, University of Southampton U.K.
- 13:15 DISCUSSION
- 13:45 **LUNCH**

Posters and Round Table Discussion
Chair : Tom Lindstrom, Sweden

14:15 Poster presentations

- K/P01** THE CHARACTERIZATION OF MEDIEVAL COLOURS AND PAPERS BY LASER DESORPTION FOURIER TRANSFORM ION CYCLOTRON RESONANCE MASS SPECTROMETRY, Y. Keheyanyan, G. Eliazyan, G. Alaverdyan, A. Sahakyan, Istituto di Chimica Nucleare, CNR, Monterotondo Stazione, 00016 Rome, Italy, Institute of Ancient Manuscripts, Dept. of Restoration, Yerevan 375009, Armenia
- K/P02** PHOTO-OXIDATION OF MASS-DEACIDIFIED PAPERS, Javier Dufour(1) and John B.G.A. Havermans(2), (1)Dep. Chemical Engineering. Faculty of Chemistry. Complutense University of Madrid. Avda. Complutense s/n. 28040 Madrid, Spain,(2)TNO Institute of Industrial Technology. Paper Production Technology. P.O. Box 6031, 2600 JA Delft, The Netherlands
- K/P03** DEVELOPMENT OF A NEW ACCELERATED AGING TEST FOR PAPER: COMPARISON OF ARTIFICIALLY ACCELERATED AND NATURAL AGING PROCESSES, C.J. Shahani, S.B. Lee, P. Song, G. Harrison and F.H. Hengemihle, Library of Congress, Washington DC, USA
- K/P04** DEPTH PROFILING OF UV YELLOWED PAPERS BY MEANS OF THE PHOTOTHERMAL DEFLECTION TECHNIQUE, M. Bertolotti, M.C. Larciprete, G. Liakhou, and S. Paoloni, INFN-Università degli Studi di Roma "La Sapienza" - Dipartimento di Energetica, Via Scarpa, 16 00161 Rome, Italy
- K/P05** CATASTROPHIC ROOM-TEMPERATURE DEGRADATION OF CELLULOSE, A. Baranski, A. Konieczna-Molenda, J.M. Lagan, L.M. Proniewicz, Dept. of Chemistry and Regional Labor. for Phys-Chem. Analyses and Struct. Res, Jagiellonian University, Ingardena 3, 30-060 Kraków, Poland
- K/P06** THE EFFECT OF ALUMINUM SULPHATE ON ACID DEGRADATION OF CELLULOSE - THE KINETIC STUDIES, A. Baranski, R. Dziembaj, A. Konieczna-Molenda, J.M. Lagan, S. Walas, Dept. of Chemistry and Regional Labor. for Phys-Chem. Analyses and Struct. Res, Jagiellonian University, Ingardena 3, 30-060 Kraków, Poland

15:00 Final general discussions

16:00 Closing of Symposium-K