FIBRES & TEXTILES in Eastern Europe

published by Instytut Biopolimerów i Włókien Chemicznych Institute of Biopolymers and Chemical Fibres (IBWCh), Łodź, Poland

Editorial Office

ul. Skłodowskiej-Curie 19/27, 90-570 Łódź, Poland tel. (48-42) 638-03-00, fax (48-42) 637-65-01 e-mail: infor@ibwch.lodz.pl http://www.fibtex.lodz.pl

> *Text Editor* Geoffrey Large *Typesetting*

Printed at

Media-Press

Beata Gawłowska, Media-Press

Editorial Department

Editor-in-Chief Bogdan Mac V-ce Editor-in-Chief Marta Cyrczak Assistant Editors Emilia Jaszczurska, Anna Wahl

Editorial Committee

Chairman: Dariusz Wawro (IBWCh) Members: Danuta Ciechańska (IBWCh) Izabela Ciesielska-Wróbel (UGent, NCSU) Włodzimierz Cygan (TUL) Robert Drobina (UB-B) Ryszard Korycki (TUL) Bipin Kumar (HKPU) Małgorzata Michniewicz (IBWCh) Rimvydas Milašius (KTU) Monika Rom (UB-B) Sigitas Stanys (KTU) Zbigniew Stempień (TUL) Krystyna Twarowska-Schmidt (IBWCh) Alojzy Urbanowski (IBWCh)

Scientific Board

Chairman: Prof. Andrzej Ziabicki Polish Academy of Sciences, Warsaw, Poland Members: **Prof. Valery Bashmetau** Vitebsk State Technological University, Belarus Prof. Andrzej Błędzki West Pomeranian University of Technology Szczecin, Poland Prof. Chokri Cherif Technical University of Dresden, Germany Porf. Hans-Peter Fink Potsdam-Golm, Germany Prof. Tadeusz Jackowski Lodz, University of Technology, Poland Prof. Vladan Koncar GEMTEX laboratory, ENSAIT, Roubaix, France Prof. Ryszard Kozłowski The Institute for Engineering of Polymer Materials and Dyes; FAO Escorena Network, Toruń, Poland Prof. Izabella Krucińska *Lodz University of Technology, Poland* Prof. Anton Marcinčin Slovak University of Technology, Bratislava, Slovak Republic Prof. Józef Masajtis Lodz University of Technology, Poland Prof. Vytautas Milašius Kaunas University of Technology, Lithuania Prof. Jiři Militký Technical University of Liberec, Czech Republic Prof. Heinrich Planck Denkendorf, Germany Prof. Zoran Stjepanovič University of Maribor, Slovenia Prof. Lieva Van Langenhove Gent University, Belgium



FIBRES & TEXTILES in Eastern Europe is decorated with the Golden Order of the Polish Textile Association



Volume 25, No. 1 (121) January / February 2017

ISSN 1230-3666

January / February 2017 Volume 25, No. 1 (121) IF 0.566 (2015)

Fibres & Textiles in Eastern Europe is inserted on the 'ISI Master Journal List' of the Institute for Scientific Information, Philadelphia, USA (for the year 2015 has an **Impact Factor of 0.566**). In Index Copernicus Journal Master List in 2014 FIBRES & TEXTILES in Eastern Europe ISSN 1230-3666 has received **ICV = 156.81**. Fibres & Textiles in Eastern Europe is indexed in Research Alert, SCI Expanded (Sci Search and Web of Science), the Materials Science Citation Index, Current Contents/Engineering, Computing & Technology; as well as by the Textile Institute, Manchester, in the Information Service; and in Rapra Technology Ltd.; Elsevier Geo Abstracts; Chemical Abstracts Service; and by Referativny Zhurnal, among others.

The content of 'Fibres & Textiles in Eastern Europe' is available by free open access on the website http://www.fibtex.lodz.pl, starting from issue No 3/2002.

No part of this publication may be reproduced without the prior written permission of the publisher: Instytut Biopolimerów i Włókien Chemicznych - Institute of Biopolymers and Chemical Fibres.

No responsibility is assumed by the publisher for any injury and/or damage to persons or property as a matter of application of any methods, products, instructions or ideas contained in the material herein. Although all advertising material is expected to conform to ethical standards, inclusion in this publication does not constitute aguarantee or endorsement of the quality or value of such product.

On the cover a fragment of Jolanta Owidzka's structural tapestry 'Prayer book'

This issue is financially supported by the Ministry of Science and Higher Education.