Applied Science & Technology Source
Database Coverage List

Applied Science & Technology Source also includes all titles indexed in Applied Science & Technology Index Retrospective: 1913-1983 (H.W. Wilson).

"Core" coverage refers to sources which are indexed and abstracted in their entirety (i.e. cover to cover), while "Priority" coverage refers to sources which include only those articles which are relevant to the field.

Please Note:
Publications included on this database are subject to change without notice due to contractual agreements with publishers. Coverage dates shown are the intended dates only and may not yet match those on the product. All coverage is cumulative. Due to third party ownership of full text, EBSCO Information Services is dependent on publisher publication schedules (and in some cases embargo periods) in order to produce full text on its products.

Coverage Policy	Source Type	ISSN / ISBN	Publication Name	Publisher	Indexing & Abstracting Start	Indexing & Abstracting Stop	Full Text Start	Full Text Stop	Full Text Delay (months)	Peer-Reviewed	PDF Images (full page)	Image Quick-View	Searchable Cited References Start	Searchable Cited References Stop
Core	Academic Journal	2153-4721	**(mt) Marine Technology**	Society of Naval Architects & Marine Engineers	01/04/2010					Y				
Core	Magazine	1539-5251	**.net Magazine**	Fawcette Technical Publications	01/01/2003	31/10/2003								
Core	Conference Proceedings Collection		**14th International Conference on POF (POF 2005) Proceedings**	IGI Group Inc.	01/01/2005	31/01/2005	01/01/2005	31/01/2005						
Core	Book / Monograph	9781602670044	**3G Wireless Technology Quick Guide**	Javvin Technologies, Inc.	01/10/2007	31/10/2007	01/10/2007	31/10/2007			Y			
Core	Magazine	0744-7868	**80 Micro**	ZDNet (Ziff-Davis Publishing)	01/01/1985	30/06/1988								
Priority	Magazine	0567-3933	**A.M.S. Archives of Industrial Health.**	Journal Collection (H.W. Wilson)	01/01/1950	01/06/1960								
Core	Academic Journal	0149-1423	**AAPG Bulletin**	American Association of Petroleum Geologists	01/09/1976					Y				
Core	Academic Journal	1532-8813	**AATCC Review**	American Association of Textile Chemists & Colorists	01/01/2001					Y				
Core	Pamphlet		**ABC's of Nuclear Science: Nuclear Structure**	Lawrence Berkeley National Laboratory	01/01/2001	31/01/2001	01/01/2001	31/01/2001						
Core	Pamphlet		**ABC's of Nuclear Science: Radioactivity**	Lawrence Berkeley National Laboratory	01/01/2001	31/01/2001	01/01/2001	31/01/2001						
Core	Pamphlet		**ABC's of Nuclear Science: Reactions**	Lawrence Berkeley National Laboratory	01/01/2001	31/01/2001	01/01/2001	31/01/2001						
Priority	Trade Publication	1051-5526	**Aberdeen's Concrete Construction**	Hanley-Wood, Inc.	01/02/1990	01/03/2001	01/01/2000	01/01/2001						
Core	Trade Publication	1087-2302	**ABQ Correspondent**	ABQ Communications Corporation	01/02/2007		01/02/2007				Y			
Priority	Magazine	0190-2946	**Academe**	American Association of University Professors	01/01/1979	01/03/1983								
Core	Academic Journal	1583-7904	**Academic Journal of Manufacturing Engineering**	Academic Association for Manufacturing Engineering	01/03/2011		01/03/2011			Y	Y			
Core	Magazine		**Access Advisor**	Advisor Media Inc	01/01/2005	31/12/2005								
Core	Magazine	1093-9105	**Access-VB-SQL Advisor**	Advisor Media Inc	01/01/2003	31/12/2004								
Core	Trade Publication	0001-4664	**Accountancy**	Wolters Kluwer UK	01/01/1965									
Core	Magazine	0001-4672	**Accountancy Age**	Incisive Financial Publishing	26/05/2005	31/03/2011								
Priority	Magazine	0001-4710	**Accountant (London).**	Journal Collection (H.W. Wilson)	01/10/1939	01/10/1939								
Core	Trade Publication	1068-6452	**Accounting Technology**	SourceMedia, Inc.	01/07/1997	31/05/2009								
Core	Trade Publication	1044-5714	**Accounting Today**	SourceMedia, Inc.	01/07/2003									
Core	Academic Journal	2088-9860	**Aceh International Journal of Science & Technology**	PPs-Unsyiah	01/11/2012		01/11/2012			Y	Y			
Core	Academic Journal	1547-3716	**ACET Journal of Computer Education & Research**	Association for Computer Educators in Texas	01/01/2013		01/01/2013			Y				
Core	Academic Journal	0889-325X	**ACI Materials Journal**	American Concrete Institute	01/01/1987		01/01/2009			Y	Y	Y	01/01/2009	
Core	Academic Journal	0889-3241	**ACI Structural Journal**	American Concrete Institute	01/01/1987		01/01/2009			Y	Y	Y	01/01/2009	
Core	Academic Journal	0360-0300	**ACM Computing Surveys**	Association for Computing Machinery	01/01/1971		01/03/2004			Y	Y	Y	01/03/1971	
Core	Academic Journal	1550-4832	**ACM Journal on Emerging Technologies in Computing Systems**	Association for Computing Machinery	01/01/2009		01/01/2009			Y	Y	Y		
Core	Academic Journal	1542-7730	**ACM Queue**	Association for Computing Machinery	01/05/2007		01/05/2007			Y	Y	Y		
Core	Conference Proceedings Collection		**ACM SIGACCESS Conference on Computers & Accessibility**	Association for Computing Machinery	01/01/2008		01/01/2008					Y		
Core	Academic Journal	1549-6325	**ACM Transactions on Algorithms**	Association for Computing Machinery	01/01/2006		01/01/2006			Y	Y	Y		
Core	Academic Journal	1556-4665	**ACM Transactions on Autonomous & Adaptive Systems**	Association for Computing Machinery	01/06/2007		01/06/2007			Y	Y	Y		
Core	Academic Journal	1529-3785	**ACM Transactions on Computational Logic**	Association for Computing Machinery	01/07/2004		01/04/2006			Y	Y	Y		
Core	Academic Journal	0734-2071	**ACM Transactions on Computer Systems**	Association for Computing Machinery	01/02/1991		01/06/2008			Y	Y	Y	01/01/2003	
Core	Academic Journal	1073-0516	**ACM Transactions on Computer-Human Interaction (TOCHI)**	Association for Computing Machinery	01/03/2003		01/04/2009			Y	Y	Y	01/01/2009	
Core	Academic Journal	0362-5915	**ACM Transactions on Database Systems**	Association for Computing Machinery	01/03/1983		01/12/1996			Y	Y	Y	01/12/1996	
Core	Academic Journal	1539-9087	**ACM Transactions on Embedded Computing Systems**	Association for Computing Machinery	01/07/2007		01/07/2007			Y	Y	Y		
Core	Academic Journal	0730-0301	**ACM Transactions on Graphics**	Association for Computing Machinery	01/01/1991					Y				
Core	Academic Journal	1094-9224	**ACM Transactions on Information & System Security (TISSEC)**	Association for Computing Machinery	01/02/2003		01/01/2009			Y	Y	Y	01/01/2009	
Core	Academic Journal	1046-8188	**ACM Transactions on Information Systems**	Association for Computing Machinery	01/06/1996		01/01/2006			Y	Y	Y	01/01/2003	
Core	Academic Journal	1533-5399	**ACM Transactions on Internet Technology**	Association for Computing Machinery	01/02/2006		01/02/2006			Y	Y	Y		
Core	Academic Journal	1556-4681	**ACM Transactions on Knowledge Discovery from Data**	Association for Computing Machinery	01/03/2007		01/03/2007			Y	Y	Y		
Core	Academic Journal	0098-3500	**ACM Transactions on Mathematical Software**	Association for Computing Machinery	01/02/1977					Y			01/01/2003	
Core	Academic Journal	1049-3301	**ACM Transactions on Modeling & Computer Simulation**	Association for Computing Machinery	01/01/1997					Y				
Core	Academic Journal	1551-6857	**ACM Transactions on Multimedia Computing, Communications & Applications**	Association for Computing Machinery	01/02/2006		01/02/2006			Y	Y	Y		
Core	Academic Journal	0164-0925	**ACM Transactions on Programming Languages & Systems**	Association for Computing Machinery	01/01/1991		01/01/2009			Y	Y	Y	01/01/2003	

Coverage Policy	Source Type	ISSN / ISBN	Publication Name	Publisher	Indexing & Abstracting Start	Indexing & Abstracting Stop	Full Text Start	Full Text Stop	Full Text Delay (months)	Peer-Reviewed	PDF Images (full page)	Image Quick-View	Searchable Cited References Start	Searchable Cited References Stop
Core	Academic Journal	1550-4859	**ACM Transactions on Sensor Networks**	Association for Computing Machinery	01/02/2009		01/02/2009			Y	Y	Y		
Core	Academic Journal	1049-331X	**ACM Transactions on Software Engineering & Methodology**	Association for Computing Machinery	01/01/1997		01/04/2006			Y	Y	Y		
Core	Academic Journal	1553-3077	**ACM Transactions on Storage**	Association for Computing Machinery	01/06/2007		01/06/2007			Y	Y	Y		
Core	Academic Journal	1559-1131	**ACM Transactions on the Web**	Association for Computing Machinery	01/05/2007		01/05/2007			Y	Y	Y		
Core	Conference Proceedings Collection		**ACM/IEEE International Conference on Human-Robot Interaction**	Association for Computing Machinery	01/01/2008		01/01/2008				Y	Y		
Core	Academic Journal	1335-8243	**Acta Electrotechnica & Informatica**	De Gruyter Open	01/08/2013		01/08/2013			Y				
Core	Academic Journal	0001-5903	**Acta Informatica**	Springer Science & Business Media B.V.	01/10/1996		01/10/1996		12	Y	Y	Y	01/01/2008	
Core	Academic Journal	0962-4929	**Acta Numerica**	Cambridge University Press	01/01/2007					Y				
Core	Academic Journal	1221-5848	**Acta Technica Napocensis: Civil Engineering & Architecture**	Universitatea Tehnica din Cluj-Napoca, Facultatea de Constructii	01/06/2013		01/06/2013			Y				
Core	Academic Journal	0882-7516	**Active & Passive Electronic Components**	Hindawi Publishing Corporation	01/03/2002		01/03/2002			Y	Y	Y	01/11/2002	
Core	Academic Journal	1570-8705	**Ad Hoc Networks**	Elsevier Science	01/01/2003					Y				
Core	Academic Journal	1059-7123	**Adaptive Behavior**	Sage Publications	01/07/1996					Y				
Core	Book / Monograph	9780471607915	**Adaptive Blind Signal & Image Processing**	John Wiley & Sons, Inc.	01/01/2002	31/01/2002	01/01/2002	31/01/2002			Y			
Core	Book / Monograph	9780471492870	**Adaptive Filtering & Change Detection**	John Wiley & Sons, Inc.	01/01/2000	02/01/2000	01/01/2000	02/01/2000			Y			
Core	Book / Monograph	9780470848258	**Adaptive WCDMA**	John Wiley & Sons, Inc.	01/01/2003	31/01/2003	01/01/2003	31/01/2003			Y			
Core	Book / Monograph	9780470846896	**Adaptive Wireless Transceivers**	John Wiley & Sons, Inc.	01/01/2002	31/01/2002	01/01/2002	31/01/2002			Y			
Core	Trade Publication	0001-821X	**Adhesives Age**	Chemical Week Associates	01/01/1967	31/08/2003								
Core	Academic Journal	1551-9899	**Adhoc & Sensor Wireless Networks**	Old City Publishing, Inc.	01/11/2006		01/11/2006			Y	Y	Y		
Core	Academic Journal	2146-586X	**Adiyaman University Journal of Science & Technology / Adıyaman Üniversitesi Fen Bilimleri Dergisi**	Adiyaman University, Institute of Science / Adiyaman Universitesi Fen Bilimleri Enstitusu	01/06/2012		01/06/2012			Y	Y			
Priority	Academic Journal	0223-5439	**Administration**	Association du Corps Prefectoral et des Hauts Fonctionnaires du Ministere de l'Interieur	01/01/1921	01/06/1923				Y				
Priority	Magazine		**Administrative Studies (University of Michigan)**	Journal Collection (H.W. Wilson)	03/01/1940	03/01/1940								
Core	Book / Monograph	9780471290995	**ADSL, VDSL, & Multicarrier Modulation**	John Wiley & Sons, Inc.	01/01/2000	31/01/2000	01/01/2000	31/01/2000			Y			
Priority	Magazine		**Adult Education & the Library**	Journal Collection (H.W. Wilson)	01/09/1925	01/01/1930								
Core	Book / Monograph	9780471626923	**Advanced Digital Signal Processing & Noise Reduction**	John Wiley & Sons, Inc.	01/01/2000	02/01/2000	01/01/2000	02/01/2000			Y			
Core	Academic Journal	2234-991X	**Advanced Engineering Forum**	Trans Tech Publications, Ltd	01/01/2013		01/01/2013			Y	Y			
Core	Academic Journal	1474-0346	**Advanced Engineering Informatics**	Elsevier Science	01/01/2002					Y				
Core	Trade Publication	1042-0711	**Advanced Imaging**	Cygnus Business Media	01/04/2007	31/08/2010								
Priority	Academic Journal		**Advanced Management**	Society for Advancement of Management	02/01/1939	01/12/1957				Y				
Core	Academic Journal	0882-7958	**Advanced Materials & Processes**	ASM International	01/10/1986		01/07/1996			Y	Y			
Core	Academic Journal	1662-8985	**Advanced Materials Research**	Trans Tech Publications, Ltd	01/03/2014		01/03/2014			Y	Y			
Core	Trade Publication	1065-0555	**Advanced Packaging**	PennWell Corporation	01/04/2003	31/01/2009	01/04/2003	31/01/2009			Y			
Core	Academic Journal	1178-6949	**Advances & Applications in Biology & Chemistry**	Dove Medical Press Ltd	01/05/2012		01/05/2012			Y	Y			
Core	Academic Journal	1687-7470	**Advances in Artificial Intelligence (16877470)**	Hindawi Publishing Corporation	01/01/2008		01/01/2008			Y	Y	Y		
Core	Academic Journal	1687-7594	**Advances in Artificial Neural Systems**	Hindawi Publishing Corporation	01/01/2008		01/01/2008			Y	Y	Y		
Core	Academic Journal	1687-8027	**Advances in Bioinformatics**	Hindawi Publishing Corporation	01/01/2008		01/01/2008			Y	Y	Y		
Core	Academic Journal	2160-0589	**Advances in Biomedical Engineering**	Information Engineering Research Institute	01/02/2012		01/02/2012			Y				
Core	Academic Journal	1687-8086	**Advances in Civil Engineering**	Hindawi Publishing Corporation	01/01/2008		01/01/2008			Y	Y	Y		
Core	Academic Journal	1019-7168	**Advances in Computational Mathematics**	Springer Science & Business Media B.V.	01/01/2007		01/01/2008		12	Y	Y	Y	01/01/2008	
Core	Academic Journal	0973-6107	**Advances in Computational Sciences & Technology**	Research India Publications	01/06/2010		01/06/2010			Y	Y	Y		
Core	Academic Journal	1687-8108	**Advances in Condensed Matter Physics**	Hindawi Publishing Corporation	01/01/2008		01/01/2008			Y	Y	Y		
Core	Academic Journal	2090-3359	**Advances in Decision Sciences**	Hindawi Publishing Corporation	01/01/2010		01/01/2010			Y	Y			
Core	Academic Journal	1336-1376	**Advances in Electrical & Electronic Engineering**	Advances in Electrical & Electronic Engineering	01/12/2011		01/12/2011			Y	Y			
Core	Academic Journal	0965-9978	**Advances in Engineering Software**	Elsevier Science	01/02/2002					Y				
Core	Academic Journal	1687-7101	**Advances in Fuzzy Systems**	Hindawi Publishing Corporation	01/01/2008		01/01/2008			Y	Y	Y		
Core	Academic Journal	1687-5893	**Advances in Human-Computer Interaction**	Hindawi Publishing Corporation	01/01/2007		01/01/2007			Y	Y	Y		
Core	Academic Journal	1976-3700	**Advances in Information Sciences & Service Sciences**	Advanced Institute of Convergence Information Technology	01/11/2011		01/11/2011			Y	Y			
Core	Academic Journal	2300-2565	**Advances in Manufacturing Science & Technology**	De Gruyter Open	01/08/2013		01/08/2013			Y	Y			
Core	Academic Journal	1730-2439	**Advances in Materials Science**	De Gruyter Open	01/08/2013		01/08/2013			Y	Y			
Core	Academic Journal	1687-8434	**Advances in Materials Science & Engineering**	Hindawi Publishing Corporation	01/01/2008		01/01/2008			Y	Y	Y		
Core	Academic Journal	2160-0643	**Advances in Mathematical & Computational Methods**	Information Engineering Research Institute	01/01/2013		01/01/2013			Y				
Core	Academic Journal	1687-9120	**Advances in Mathematical Physics**	Hindawi Publishing Corporation	01/01/2008		01/01/2008			Y	Y	Y		
Core	Academic Journal	1930-5346	**Advances in Mathematics of Communications**	American Institute of Mathematical Sciences	01/03/2012		01/03/2012			Y	Y			
Core	Academic Journal	2160-0619	**Advances in Mechanical Engineering (2160-0619)**	Information Engineering Research Institute	01/01/2013		01/01/2013			Y				
Core	Academic Journal	1687-8132	**Advances in Mechanical Engineering (Hindawi Publishing Corporation)**	Hindawi Publishing Corporation	01/01/2008	31/12/2014	01/01/2008	31/12/2014		Y	Y	Y		
Core	Academic Journal	1687-8132	**Advances in Mechanical Engineering (Sage Publications Inc.)**	Sage Publications	01/01/2015					Y				
Core	Academic Journal	1687-5680	**Advances in Multimedia**	Hindawi Publishing Corporation	01/01/2007		01/01/2007			Y	Y	Y	01/01/2007	
Core	Academic Journal	1687-7276	**Advances in Nonlinear Optics**	Hindawi Publishing Corporation	01/01/2008	31/01/2009	01/01/2008	31/01/2009		Y	Y	Y		
Core	Academic Journal	1687-9147	**Advances in Operations Research**	Hindawi Publishing Corporation	01/01/2008		01/01/2008			Y	Y	Y		
Core	Academic Journal	1687-6393	**Advances in Optical Technologies**	Hindawi Publishing Corporation	01/01/2008		01/01/2008			Y	Y	Y		
Core	Academic Journal	1687-563X	**Advances in OptoElectronics**	Hindawi Publishing Corporation	01/01/2008		01/01/2008			Y	Y	Y	01/01/2008	
Core	Academic Journal	2090-181X	**Advances in Power Electronics**	Hindawi Publishing Corporation	01/01/2009		01/01/2009			Y	Y	Y		

Coverage Policy	Source Type	ISSN / ISBN	Publication Name	Publisher	Indexing & Abstracting Start	Indexing & Abstracting Stop	Full Text Start	Full Text Stop	Full Text Delay (months)	Peer-Reviewed	PDF Images (full page)	Image Quick-View	Searchable Cited References Start	Searchable Cited References Stop
Core	Magazine		**Internet World UK**	Penton Publishing	01/04/2004	30/04/2004	01/04/2004	30/04/2004			Y			
Core	Magazine	2156-843X	**Internet@Schools**	Information Today Inc.	01/01/2011		01/01/2011				Y			
Core	Magazine	1096-9969	**InternetWeek**	United Business Media	01/09/1997	08/01/2002								
Core	Magazine	1079-0373	**Internetwork**	Boucher Communications Inc.	01/07/1996	31/03/1997								
Core	Book / Monograph	9780471975144	**Internetworking LANs & WANs**	John Wiley & Sons, Inc.	01/01/1998	02/01/1998	01/01/1998	02/01/1998			Y			
Core	Magazine	1546-3087	**Intranets**	Information Today Inc.	01/01/2004									
Core	Book / Monograph	9788479088736	**Introducción a la Programación Orientada a Objetos**	Digitalia, Inc.	01/01/2006	31/01/2006	01/01/2006	31/01/2006			Y	Y		
Core	Book / Monograph	9788479085735	**Introducción a la Programación, Algoritmos y C/C++**	Digitalia, Inc.	01/01/2000	31/01/2000	01/01/2000	31/01/2000			Y	Y		
Core	Book / Monograph	9788479087630	**Introducción a la Teoria de la Computabilidad**	Digitalia, Inc.	01/01/2003	31/01/2003	01/01/2003	31/01/2003			Y	Y		
Core	Book / Monograph	9788479088101	**Introducción a las Bases de Datos Access 2003**	Digitalia, Inc.	01/01/2004	31/01/2004	01/01/2004	31/01/2004			Y	Y		
Core	Book / Monograph	9788479087661	**Introducción a las Operaciones de Separación. Cálculo Por Etapas de Equilibrio**	Digitalia, Inc.	01/01/2003	31/01/2003	01/01/2003	31/01/2003			Y	Y		
Core	Book / Monograph	9788479087128	**Introducción a las Operaciones de Separación. Contacto Continuo**	Digitalia, Inc.	01/01/2004	31/01/2004	01/01/2004	31/01/2004			Y	Y		
Core	Book / Monograph	9788479084356	**Introducción a TCP/IP. Sistemas de Transporte de Datos**	Digitalia, Inc.	01/01/1998	31/01/1998	01/01/1998	31/01/1998			Y	Y		
Core	Book / Monograph	9788479085759	**Introducción a Word 2000**	Digitalia, Inc.	01/01/2000	31/01/2000	01/01/2000	31/01/2000			Y	Y		
Core	Book / Monograph	9780471491873	**Introduction to IP & ATM Design & Performance**	John Wiley & Sons, Inc.	01/01/2000	02/01/2000	01/01/2000	02/01/2000			Y			
Core	Book / Monograph	9780471406341	**Introduction to Optical Waveguide Analysis**	John Wiley & Sons, Inc.	01/01/2001	02/01/2001	01/01/2001	02/01/2001			Y			
Core	Academic Journal	0266-5611	**Inverse Problems**	IOP Publishing	01/04/2003					Y				
Core	Academic Journal	1930-8337	**Inverse Problems & Imaging**	American Institute of Mathematical Sciences	01/03/2012		01/03/2012			Y	Y			
Priority	Report		**Investigational Report. United States. Bureau of Fisheries**	Book Collection (H.W. Wilson)	01/01/1931	01/01/1939								
Priority	Magazine		**Investment Banking**	Journal Collection (H.W. Wilson)	01/04/1931	01/01/1945								
Priority	Magazine		**Iowa State College Bulletin**	Journal Collection (H.W. Wilson)	01/01/1916	02/01/1941								
Priority	Magazine		**Iowa State College. Engineering Experiment Station. Bulletin**	Journal Collection (H.W. Wilson)	01/01/1924	01/01/1945								
Priority	Magazine		**Iowa Studies in Business (University of Iowa. Bureau of Business & Economic Research)**	Journal Collection (H.W. Wilson)	01/01/1930	02/01/1937								
Priority	Magazine		**Iowa University Studies in Engineering Bulletin**	Journal Collection (H.W. Wilson)	01/01/1926	01/01/1947								
Priority	Magazine		**Iowa University Studies in Natural History**	Journal Collection (H.W. Wilson)	01/01/1921	02/01/1940								
Priority	Magazine		**Iowa University Studies in Social Sciences**	Journal Collection (H.W. Wilson)	01/01/1927	02/01/1939								
Core	Book / Monograph	9780471486978	**IP for 3G**	John Wiley & Sons, Inc.	01/01/2002	02/01/2002	01/01/2002	02/01/2002			Y			
Core	Book / Monograph	9780470844175	**IP Over WDM**	John Wiley & Sons, Inc.	01/01/2002	31/01/2002	01/01/2002	31/01/2002			Y			
Core	Magazine	2167-5325	**iPro Developer**	Penton Publishing	01/05/2012		01/05/2012				Y			
Core	Book / Monograph	9781602670051	**IPv6 Deployment Guide**	Javvin Technologies, Inc.	01/09/2008	30/09/2008	01/09/2008	30/09/2008				Y		
Core	Conference Proceedings Collection	1891-9863	**IRIS: Selected Papers of the Information Systems Research Seminar in Scandinavia**	Akademika Publishing	01/08/2009		01/08/2009				Y			
Priority	Trade Publication	0021-1559	**Iron & Steel Engineer**	Association for Iron & Steel Technology	02/01/1948	01/11/1996								
Core	Magazine	0897-4365	**Iron Age**	Euromoney Institutional Investor PLC	03/10/1983	30/09/1993								
Priority	Magazine	0021-1508	**Iron Age (New York, N.Y.).**	Journal Collection (H.W. Wilson)	02/01/1913	06/12/1982								
Priority	Trade Publication	0747-6329	**Iron Age Metals Producer**	American Metal Market LLC	02/01/1984	01/11/1987								
Priority	Magazine		**Iron Trade Review**	Journal Collection (H.W. Wilson)	02/01/1913	26/06/1930								
Priority	Academic Journal	0301-9233	**Ironmaking & Steelmaking**	Maney Publishing	01/01/1974	07/01/1982				Y				
Priority	Magazine	0096-0810	**Isa Journal.**	Journal Collection (H.W. Wilson)	01/01/1958	01/12/1966								
Core	Academic Journal	0019-0578	**ISA Transactions**	Elsevier Science	04/01/1967					Y				
Core	Academic Journal	2042-5678	**iSChannel**	iSChannel	01/09/2011		01/09/2011			Y	Y			
Core	Book / Monograph	9780471979050	**ISDN Explained**	John Wiley & Sons, Inc.	01/01/1998	02/01/1998	01/01/1998	02/01/1998			Y			
Core	Academic Journal	2008-2045	**ISeCure**	Iranian Society of Cryptology	01/01/2009		01/01/2009			Y	Y			
Core	Magazine	1536-755X	**iSeries NEWS**	Penton Publishing	01/04/2004	31/08/2006	01/04/2004	31/08/2006			Y			
Core	Magazine	1475-9128	**iSeries NEWS UK**	UBM Information Ltd.	01/02/2005	31/08/2006	01/02/2005	31/08/2006			Y			
Priority	Academic Journal	0021-1753	**ISIS: Journal of the History of Science in Society**	University of Chicago Press	01/03/1946	01/03/1946				Y				
Core	Academic Journal	2090-7443	**ISRN Artificial Intelligence**	Hindawi Publishing Corporation	01/01/2012		01/01/2012			Y	Y			
Core	Academic Journal	2090-7494	**ISRN Ceramics**	Hindawi Publishing Corporation	01/01/2012		01/01/2012			Y	Y			
Core	Academic Journal	2090-861X	**ISRN Chemical Engineering**	Hindawi Publishing Corporation	01/02/2013		01/02/2013			Y	Y			
Core	Academic Journal	2090-8636	**ISRN Chromatography**	Hindawi Publishing Corporation	01/02/2013		01/02/2013			Y	Y			
Core	Academic Journal	2090-4355	**ISRN Communications & Networking**	Hindawi Publishing Corporation	01/01/2011		01/01/2011			Y	Y			
Core	Academic Journal	2090-8903	**ISRN Corrosion**	Hindawi Publishing Corporation	01/01/2012		01/01/2012			Y	Y			
Core	Academic Journal	2090-8679	**ISRN Electronics**	Hindawi Publishing Corporation	01/02/2013		01/02/2013			Y	Y			
Core	Academic Journal	2090-8946	**ISRN Geophysics**	Hindawi Publishing Corporation	01/01/2012		01/01/2012			Y	Y			
Core	Academic Journal	2090-8717	**ISRN Metallurgy**	Hindawi Publishing Corporation	01/01/2012		01/01/2012			Y	Y			
Core	Academic Journal	2090-7907	**ISRN Molecular Biology**	Hindawi Publishing Corporation	01/01/2012		01/01/2012			Y	Y			
Core	Academic Journal	2090-6064	**ISRN Nanotechnology**	Hindawi Publishing Corporation	01/01/2011		01/01/2011			Y	Y			
Core	Academic Journal	2090-5041	**ISRN Signal Processing**	Hindawi Publishing Corporation	01/01/2011		01/01/2011			Y	Y			
Core	Academic Journal	2090-8776	**ISRN Spectroscopy**	Hindawi Publishing Corporation	01/01/2012		01/01/2012			Y	Y			
Core	Academic Journal	1547-5840	**Issues in Informing Science & Information Technology**	Informing Science	01/01/2004		01/01/2004			Y	Y	Y		
Core	Academic Journal	0748-5492	**Issues in Science & Technology**	University of Texas at Dallas	01/07/1990		01/09/1990			Y	Y	Y	01/07/2005	
Core	Trade Publication	1557-2145	**IT Architect**	United Business Media	01/09/2005	31/03/2006								
Core	Magazine	1520-9202	**IT Professional**	IEEE Computer Society	01/01/1999		01/09/2010				Y	Y		
Core	Magazine	1462-396X	**IT Week**	Incisive Financial Publishing	30/05/2005	31/08/2008	30/05/2005	31/08/2008						

Coverage Policy	Source Type	ISSN / ISBN	Publication Name	Publisher	Indexing & Abstracting Start	Indexing & Abstracting Stop	Full Text Start	Full Text Stop	Full Text Delay (months)	Peer-Reviewed	PDF Images (full page)	Image Quick-View	Searchable Cited References Start	Searchable Cited References Stop
Core	Academic Journal	0162-8178	**ITE Journal**	Institute of Transportation Engineers	01/06/1978		01/09/1998	01/01/2012		Y	Y			
Core	Academic Journal	1746-5702	**ITNOW**	Oxford University Press	01/03/2005		01/03/2005		12	Y	Y			
Core	Academic Journal	0974-6544	**IUP Journal of Computational Mathematics**	IUP Publications	01/12/2009	31/03/2012	01/12/2009	31/03/2012		Y	Y	Y		
Core	Academic Journal	0973-9904	**IUP Journal of Computer Sciences**	IUP Publications	01/08/2009		01/08/2009			Y	Y	Y		
Core	Academic Journal	0973-2896	**IUP Journal of Information Technology**	IUP Publications	01/08/2009		01/08/2009			Y	Y	Y		
Core	Academic Journal	0974-6536	**IUP Journal of Mechanical Engineering**	IUP Publications	01/11/2009		01/11/2009			Y	Y	Y		
Core	Academic Journal	0973-2268	**IUP Journal of Science & Technology**	IUP Publications	01/08/2009	31/12/2011	01/08/2009	31/12/2011		Y	Y	Y		
Core	Academic Journal	0972-6896	**IUP Journal of Systems Management**	IUP Publications	01/08/2009	29/02/2012	01/08/2009	29/02/2012		Y	Y	Y		
Core	Magazine	1345-4846	**J@pan Inc.**	Japan Inc Communications, K.K.	01/11/1999	31/07/2009	01/11/1999	31/07/2009			Y			
Core	Academic Journal	1638-5705	**JSeA**	EDP Sciences	01/01/2011		01/01/2011			Y	Y			
Core	Magazine	0894-0630	**JAPCA**	Air & Waste Management Association	01/02/1985	01/12/1989								
Core	Academic Journal	1547-0083	**JCT CoatingsTech**	American Coatings Association	01/01/2004	01/11/2011	01/01/2004	01/11/2011		Y	Y			
Core	Academic Journal	1945-9645	**JCT Research**	Springer Science & Business Media B.V.	01/01/2004	01/09/2008	01/01/2004	01/09/2008		Y	Y	Y	01/01/2008	31/10/2008
Priority	Magazine	0095-8751	**Jet Propulsion.**	Journal Collection (H.W. Wilson)	01/01/1958	01/12/1958								
Priority	Academic Journal	0021-3667	**JGE: The Journal of General Education**	Pennsylvania State University Press	01/01/1973	01/07/1982				Y				
Priority	Magazine		**JOM (1974)**	Journal Collection (H.W. Wilson)	01/12/1974	01/10/1981								
Core	Academic Journal	1047-4838	**JOM: The Journal of The Minerals, Metals & Materials Society (TMS)**	Springer Science & Business Media B.V.	01/12/1975		01/01/2004		12	Y	Y	Y	01/01/2008	
Priority	Academic Journal	0099-1333	**Journal of Academic Librarianship**	Elsevier Science	01/07/1977	01/03/1983				Y				
Priority	Academic Journal	0021-8448	**Journal of Accountancy**	American Institute of Certified Public Accountants	01/01/1913	01/12/1957				Y				
Core	Academic Journal	1555-0281	**Journal of Active & Passive Electronic Devices**	Old City Publishing, Inc.	01/10/2007		01/10/2007			Y	Y	Y		
Core	Academic Journal	0021-8502	**Journal of Aerosol Science**	Pergamon Press - An Imprint of Elsevier Science	01/03/2002					Y				
Core	Academic Journal	0893-1321	**Journal of Aerospace Engineering**	American Society of Civil Engineers	01/01/1991		01/01/1995	30/03/2014		Y	Y	Y		
Priority	Academic Journal	0021-8561	**Journal of Agricultural & Food Chemistry**	American Chemical Society	01/01/1958	28/06/2006				Y				
Core	Academic Journal	0021-8669	**Journal of Aircraft**	American Institute of Aeronautics & Astronautics	01/01/1967					Y				
Core	Academic Journal	0196-6774	**Journal of Algorithms**	Academic Press	01/01/2002					Y				
Core	Academic Journal	1748-3018	**Journal of Algorithms & Computational Technology**	Multi-Science Publishing Co Ltd	01/11/2009		01/11/2009			Y	Y	Y	01/11/2009	
Core	Academic Journal	1876-1364	**Journal of Ambient Intelligence & Smart Environments**	IOS Press	01/08/2010		01/08/2010		12	Y	Y	Y		
Priority	Academic Journal	1060-3271	**Journal of AOAC International**	AOAC International	01/11/2008	01/11/2008				Y				
Priority	Academic Journal	0021-8863	**Journal of Applied Behavioral Science**	Sage Publications	01/09/1969	01/12/1982				Y				
Core	Academic Journal	1065-8483	**Journal of Applied Biomechanics**	Human Kinetics Publishers, Inc.	01/02/1993					Y			01/05/2006	
Priority	Academic Journal	0375-9210	**Journal of Applied Chemistry & Biotechnology**	John Wiley & Sons	01/01/1971	02/11/1976				Y				
Priority	Magazine	0021-8871	**Journal of Applied Chemistry.**	Journal Collection (H.W. Wilson)	01/01/1951	01/12/1970								
Core	Academic Journal	2066-4273	**Journal of Applied Computer Science & Mathematics**	Journal of Applied Computer Science & Mathematics	01/07/2010		01/07/2010			Y	Y	Y		
Core	Academic Journal	2230-4398	**Journal of Applied Computing & Information Technology**	Computing & Information Technology Research & Education New Zealand (CITRENZ)	01/01/2011		01/01/2011			Y	Y		01/01/2011	
Core	Academic Journal	0021-891X	**Journal of Applied Electrochemistry**	Springer Science & Business Media B.V.	01/01/1983		01/01/1997		12	Y	Y	Y	01/01/2008	
Core	Academic Journal	2247-3769	**Journal of Applied Engineering Sciences**	University of Oradea, Faculty of Constructions & Architecture	01/01/2013		01/01/2013			Y	Y			
Core	Academic Journal	1735-3572	**Journal of Applied Fluid Mechanics**	Regional Information Center for Science & Technology	01/01/2008		01/01/2008			Y	Y	Y	01/01/2008	
Core	Academic Journal	1559-1948	**Journal of Applied Functional Analysis**	Eudoxus Press, LLC	01/01/2006		01/01/2006			Y	Y	Y		
Core	Academic Journal	2160-0953	**Journal of Applied Learning Technology**	Society for Applied Learning Technology	01/08/2011		01/08/2011			Y	Y			
Core	Academic Journal	1570-8683	**Journal of Applied Logic**	Elsevier Science	01/01/2003					Y				
Core	Academic Journal	0021-8936	**Journal of Applied Mechanics**	American Society of Mechanical Engineers	01/03/1958					Y				
Core	Academic Journal	0894-8763	**Journal of Applied Meteorology**	American Meteorological Society	01/02/1967	31/12/2005	01/07/1996	31/12/2005		Y	Y		01/07/1996	31/12/2005
Core	Academic Journal	1558-8424	**Journal of Applied Meteorology & Climatology**	American Meteorological Society	01/01/2006		01/01/2006			Y	Y	Y	01/01/2006	
Core	Academic Journal	1166-3081	**Journal of Applied Non-Classical Logics**	Taylor & Francis Ltd	01/06/2011					Y				
Core	Academic Journal	0021-8979	**Journal of Applied Physics**	American Institute of Physics	01/01/1940		01/01/1985		12	Y	Y	Y	01/01/2003	
Priority	Academic Journal	0021-9010	**Journal of Applied Psychology**	American Psychological Association	01/06/1929	01/12/1982				Y				
Core	Academic Journal	1939-8565	**Journal of Applied Science & Engineering Technology**	Rochester Institute of Technology	01/09/2011	31/12/2011	01/09/2011	31/12/2011		Y	Y	Y		
Core	Academic Journal	0855-2215	**Journal of Applied Science & Technology**	Journal of Applied Science & Technology (JAST)	01/01/2012		01/01/2012			Y	Y			
Core	Academic Journal	1076-0431	**Journal of Architectural Engineering**	American Society of Civil Engineers	01/01/1995		01/01/1995	30/03/2014		Y	Y	Y	01/03/2008	
Core	Academic Journal	1076-9757	**Journal of Artificial Intelligence Research**	AAAI	01/01/2004					Y				
Core	Academic Journal	1737-9334	**Journal of Artificial Intelligence: Theory & Application**	HyperSciences Publisher	01/02/2010	31/07/2010	01/02/2010	31/07/2010		Y	Y	Y		
Core	Academic Journal	0739-0572	**Journal of Atmospheric & Oceanic Technology**	American Meteorological Society	01/01/1997		01/01/1997			Y	Y	Y	01/01/1997	
Core	Academic Journal	0168-7433	**Journal of Automated Reasoning**	Springer Science & Business Media B.V.	01/01/2007					Y				
Core	Academic Journal	1064-2315	**Journal of Automation & Information Sciences**	Begell House Incorporated	01/01/2002	30/09/2005				Y				
Priority	Academic Journal	0021-9258	**Journal of Biological Chemistry**	American Society for Biochemistry & Molecular Biology	18/03/2005	11/08/2006				Y				
Core	Academic Journal	0148-0731	**Journal of Biomechanical Engineering**	American Society of Mechanical Engineers	01/02/1983					Y				
Core	Academic Journal	1532-0464	**Journal of Biomedical Informatics**	Academic Press	01/01/2002					Y				
Priority	Academic Journal	0021-9304	**Journal of Biomedical Materials Research**	John Wiley & Sons, Inc.	01/01/2001	15/12/2007				Y				
Core	Academic Journal	1549-3296	**Journal of Biomedical Materials Research, Part A**	John Wiley & Sons, Inc.	01/06/2003	31/03/2004				Y				
Core	Academic Journal	1552-4973	**Journal of Biomedical Materials Research, Part B: Applied Biomaterials**	John Wiley & Sons, Inc.	15/04/2003	30/04/2004				Y				

Coverage Policy	Source Type	ISSN / ISBN	Publication Name	Publisher	Indexing & Abstracting Start	Indexing & Abstracting Stop	Full Text Start	Full Text Stop	Full Text Delay (months)	Peer-Reviewed	PDF Images (full page)	Image Quick-View	Searchable Cited References Start	Searchable Cited References Stop
Core	Academic Journal	2251-7200	**Journal of Biomedical Physics & Engineering**	Shiraz University of Medical Sciences, School of Medicine, Department of Medical Physics	01/11/2012		01/11/2012			Y	Y			
Core	Academic Journal	1084-0702	**Journal of Bridge Engineering**	American Society of Civil Engineers	01/02/1996		01/02/1996	30/03/2014		Y	Y	Y		
Core	Academic Journal	0883-8151	**Journal of Broadcasting & Electronic Media**	Broadcast Education Association	01/01/1985		01/01/1985			Y	Y	Y	01/01/2003	
Core	Academic Journal	1940-1493	**Journal of Building Performance Simulation**	Taylor & Francis Ltd	01/02/2008					Y			01/02/2008	
Priority	Academic Journal	0021-9398	**Journal of Business**	University of Chicago Press	01/01/1928	01/10/1957				Y				
Priority	Academic Journal	0740-9168	**Journal of Business of the University of Chicago**	University of Chicago Press	01/07/1931	01/10/1947				Y				
Core	Academic Journal	0021-9517	**Journal of Catalysis**	Academic Press	01/01/1991					Y				
Priority	Academic Journal	0021-9533	**Journal of Cell Science**	Company of Biologists Ltd.	15/04/2006	15/04/2006				Y				
Core	Academic Journal	1879-9523	**Journal of Chain-computerisation**	Universiteit Utrecht	01/01/2011		01/01/2011			Y	Y			
Core	Academic Journal	0021-9568	**Journal of Chemical & Engineering Data**	American Chemical Society	01/01/1977					Y				
Priority	Academic Journal	0021-9584	**Journal of Chemical Education**	American Chemical Society	01/12/1929	01/11/1957				Y				
Core	Academic Journal	0095-2338	**Journal of Chemical Information & Computer Sciences**	American Chemical Society	01/04/2003	30/11/2004				Y				
Core	Academic Journal	1549-9596	**Journal of Chemical Information & Modeling**	American Chemical Society	01/01/2007					Y				
Priority	Academic Journal	0021-9606	**Journal of Chemical Physics**	American Institute of Physics	01/01/1941	04/10/1957				Y				
Core	Academic Journal	0268-2575	**Journal of Chemical Technology & Biotechnology**	John Wiley & Sons, Inc.	01/01/1991					Y				
Priority	Academic Journal	0021-9630	**Journal of Child Psychology & Psychiatry & Allied Disciplines**	Wiley-Blackwell	01/12/1968	01/04/1983				Y				
Core	Academic Journal	1671-8224	**Journal of Chongqing University**	Chongqing Daxue	01/03/2007					Y				
Core	Academic Journal	0218-1266	**Journal of Circuits, Systems & Computers**	World Scientific Publishing Company	01/02/1999		01/02/1999		12	Y	Y	Y		
Core	Academic Journal	0733-3021	**Journal of Climate & Applied Meteorology**	American Meteorological Society	01/01/1983	31/12/1987				Y				
Priority	Academic Journal	0021-9762	**Journal of Clinical Psychology**	John Wiley & Sons, Inc.	01/01/1949	01/04/1961				Y				
Core	Academic Journal	0749-0208	**Journal of Coastal Research**	Allen Press Publishing Services Inc.	01/03/1994		01/01/2001			Y	Y	Y	01/03/1994	
Core	Academic Journal	0361-8773	**Journal of Coatings Technology**	Springer Science & Business Media B.V.	01/01/1983	31/12/2003				Y				
Core	Academic Journal	1547-0091	**Journal of Coatings Technology & Research**	Springer Science & Business Media B.V.	01/03/2007		01/03/2007		12	Y	Y	Y	01/03/2007	
Priority	Academic Journal	1935-3804	**Journal of Coatings Technology & Research.**	Journal Collection (H.W. Wilson)	01/03/2007	01/07/2011	01/03/2007	01/11/2010		Y				
Core	Academic Journal	0898-929X	**Journal of Cognitive Neuroscience**	MIT Press	01/07/1996					Y			01/01/2003	
Core	Academic Journal	0887-381X	**Journal of Cold Regions Engineering**	American Society of Civil Engineers	01/03/1991		01/01/1995	30/03/2014		Y	Y	Y		
Priority	Academic Journal	0021-9797	**Journal of Colloid & Interface Science**	Academic Press	01/01/1966	01/11/1966				Y				
Priority	Academic Journal	0095-8522	**Journal of Colloid Science**	Academic Press	01/02/1958	01/12/1965				Y				
Core	Academic Journal	1382-6905	**Journal of Combinatorial Optimization**	Springer Science & Business Media B.V.	01/01/2007					Y				
Core	Academic Journal	0097-3165	**Journal of Combinatorial Theory - Series A**	Academic Press	01/01/2002					Y				
Priority	Magazine		**Journal of Combustion Toxicology**	Journal Collection (H.W. Wilson)	01/02/1977	01/05/1982								
Priority	Academic Journal	0021-9916	**Journal of Communication**	Wiley-Blackwell	01/09/1961	01/12/1983				Y				
Core	Academic Journal	2093-9671	**Journal of Communications & Information Sciences**	Advanced Institute of Convergence Information Technology	01/11/2011		01/11/2011			Y	Y			
Core	Academic Journal	1845-6421	**Journal of Communications Software & Systems**	Croatian Communications & Information Society	01/03/2010		01/03/2010			Y	Y	Y		
Core	Academic Journal	1064-2269	**Journal of Communications Technology & Electronics**	Springer Science & Business Media B.V.	01/01/2011		01/01/2011		12	Y	Y			
Core	Academic Journal	2051-1310	**Journal of Complex Networks**	Oxford University Press	01/01/2013		01/01/2013		12	Y	Y			
Core	Academic Journal	0885-064X	**Journal of Complexity**	Academic Press	01/01/2002					Y				
Core	Academic Journal	0021-9983	**Journal of Composite Materials**	Sage Publications	01/01/1991					Y				
Core	Academic Journal	1090-0268	**Journal of Composites for Construction**	American Society of Civil Engineers	01/02/1997		01/02/1997	30/03/2014		Y	Y	Y	01/01/2003	
Core	Academic Journal	0377-0427	**Journal of Computational & Applied Mathematics**	Elsevier Science	01/01/2002					Y				
Core	Academic Journal	1586-2070	**Journal of Computational & Applied Mechanics**	Institute of Mathematics, University of Miskolc	01/01/2013		01/01/2013			Y	Y			
Core	Academic Journal	1061-8600	**Journal of Computational & Graphical Statistics**	Taylor & Francis Ltd	01/01/1994		01/09/2012		18	Y	Y		01/01/2003	
Core	Academic Journal	0218-396X	**Journal of Computational Acoustics**	World Scientific Publishing Company	01/03/1999		01/03/1999		12	Y	Y	Y		
Core	Academic Journal	1521-1398	**Journal of Computational Analysis & Applications**	Eudoxus Press, LLC	01/04/2003		01/01/2006			Y	Y	Y		
Core	Academic Journal	2158-2491	**Journal of Computational Dynamics**	American Institute of Mathematical Sciences	01/03/2012		01/03/2012			Y	Y			
Core	Academic Journal	0973-385X	**Journal of Computational Intelligence in Bioinformatics**	Research India Publications	01/01/2008		01/01/2008			Y	Y	Y		
Core	Academic Journal	0254-9409	**Journal of Computational Mathematics**	Global Science Press	01/03/1999		01/03/1999			Y	Y			
Core	Academic Journal	1472-7978	**Journal of Computational Methods in Sciences & Engineering**	IOS Press	01/01/2005		01/01/2005		12	Y	Y	Y		
Core	Academic Journal	0022-0000	**Journal of Computer & System Sciences**	Academic Press	01/01/2002					Y				
Core	Academic Journal	1064-2307	**Journal of Computer & Systems Sciences International**	Springer Science & Business Media B.V.	01/01/2012		01/01/2012		12	Y	Y			
Core	Academic Journal	0266-4909	**Journal of Computer Assisted Learning**	Wiley-Blackwell	01/03/1998		01/03/1998		12	Y	Y	Y	01/01/2003	
Core	Academic Journal	0887-4417	**Journal of Computer Information Systems**	International Association for Computer Information Systems	01/07/2000		01/07/2000			Y	Y		01/01/2003	
Core	Academic Journal	2090-7141	**Journal of Computer Networks & Communications**	Hindawi Publishing Corporation	01/01/2011		01/01/2011			Y	Y	Y		
Core	Academic Journal		**Journal of Computer Resource Management**	Computer Measurement Group	01/09/2002	31/01/2003				Y				
Core	Academic Journal	1844-6043	**Journal of Computer Science & Control Systems**	Journal of Computer Science & Control Systems	01/10/2009		01/10/2009			Y	Y	Y		
Core	Academic Journal	1000-9000	**Journal of Computer Science & Technology (10009000)**	Springer Science & Business Media B.V.	01/01/2007					Y				
Core	Academic Journal	1666-6046	**Journal of Computer Science & Technology (JCS&T)**	Journal of Computer Science & Technology	01/10/2008		01/10/2008			Y	Y	Y	01/10/2008	
Core	Academic Journal	0926-227X	**Journal of Computer Security**	IOS Press	01/03/1996		01/03/1996		9	Y	Y	Y	01/01/2003	
Core	Academic Journal	1687-7381	**Journal of Computer Systems, Networks, & Communications**	Hindawi Publishing Corporation	01/01/2008	31/12/2010	01/01/2008	31/12/2010		Y	Y	Y		
Core	Academic Journal	0928-1045	**Journal of Computer-Aided Materials Design**	Springer Science & Business Media B.V.	01/01/2004	31/12/2007				Y			01/01/2008	31/01/2008
Core	Academic Journal	0920-654X	**Journal of Computer-Aided Molecular Design**	Springer Science & Business Media B.V.	01/01/2003		01/01/2003		12	Y	Y	Y	01/01/2008	
Core	Academic Journal	0731-9258	**Journal of Computers in Mathematics & Science Teaching**	Association for the Advancement of Computing in Education	01/04/2003					Y			01/07/2005	
Core	Academic Journal	1530-9827	**Journal of Computing & Information Science in Engineering**	American Society of Mechanical Engineers	01/01/2007					Y				

Coverage Policy	Source Type	ISSN / ISBN	Publication Name	Publisher	Indexing & Abstracting Start	Indexing & Abstracting Stop	Full Text Start	Full Text Stop	Full Text Delay (months)	Peer-Reviewed	PDF Images (full page)	Image Quick-View	Searchable Cited References Start	Searchable Cited References Stop
Priority	Magazine		**Wireless Age**	Journal Collection (H.W. Wilson)	02/01/1920	01/07/1925								
Core	Magazine	1681-1399	**Wireless Asia**	Questex Media Group	01/09/2001	31/01/2011	01/09/2001	31/01/2011			Y			
Core	Academic Journal	1530-8669	**Wireless Communications & Mobile Computing**	John Wiley & Sons, Inc.	01/01/2001		01/01/2001		12	Y	Y	Y	01/01/2008	
Core	Book / Monograph	9780471316510	**Wireless Data Handbook**	John Wiley & Sons, Inc.	01/01/1999	02/01/1999	01/01/1999	02/01/1999			Y			
Core	Book / Monograph	9780470849491	**Wireless Data Technologies**	John Wiley & Sons, Inc.	01/01/2003	31/01/2003	01/01/2003	31/01/2003			Y			
Core	Trade Publication	1076-4240	**Wireless Design & Development**	Advantage Business Media	01/08/1999		01/08/1999				Y	Y		
Priority	Magazine		**Wireless Engineer**	Journal Collection (H.W. Wilson)	01/01/1936	01/12/1956								
Priority	Magazine		**Wireless Engineer & Experimental Wireless**	Journal Collection (H.W. Wilson)	01/09/1931	01/12/1935								
Core	Book / Monograph	9780471498469	**Wireless Local Loops**	John Wiley & Sons, Inc.	01/01/2001	31/01/2001	01/01/2001	31/01/2001			Y			
Core	Book / Monograph	9780470845295	**Wireless Networks**	John Wiley & Sons, Inc.	01/01/2003	31/01/2003	01/01/2003	31/01/2003			Y			
Core	Academic Journal	1022-0038	**Wireless Networks (10220038)**	Springer Science & Business Media B.V.	01/01/2001		01/01/2001		12	Y	Y	Y	01/01/2008	
Core	Academic Journal	0929-6212	**Wireless Personal Communications**	Springer Science & Business Media B.V.	01/01/2007		01/01/2008		12	Y	Y	Y	01/01/2008	
Core	Trade Publication	1099-9248	**Wireless Review**	Penton Media, Inc.	01/01/1998	30/11/2005	01/01/1998	30/11/2005			Y			
Core	Magazine	1089-5566	**Wireless Systems Design**	Penton Publishing	01/09/1999	31/03/2005								
Core	Trade Publication	1085-0473	**Wireless Week**	Advantage Business Media	09/08/1999		09/08/1999				Y	Y		
Priority	Magazine	0043-6062	**Wireless World.**	Journal Collection (H.W. Wilson)	01/01/1958	01/09/1983								
Priority	Magazine	0043-6526	**Wisconsin Library Bulletin**	Wisconsin Department of Public Instruction, Division for Libraries, Technology & Community Learning	01/02/1919	01/05/1924								
Core	Book / Monograph	9781602670082	**WLAN Quick Guide**	Javvin Technologies, Inc.	01/10/2007	31/10/2007	01/10/2007	31/10/2007			Y			
Core	Trade Publication	0043-7662	**Wood & Wood Products**	Vance Publishing Corporation	01/01/1983	30/04/2013	01/01/1996	30/04/2013			Y			
Core	Academic Journal	1748-0272	**Wood Material Science & Engineering**	Taylor & Francis Ltd	01/01/2006					Y			01/01/2008	
Core	Magazine	2327-7823	**Wood Products**	Vance Publishing Corporation	01/05/2013		01/05/2013				Y			
Priority	Academic Journal	0730-8884	**Work & Occupations**	Sage Publications	01/08/2007	01/08/2007				Y				
Core	Trade Publication	1529-5052	**World Broadcast Engineering**	Penton Media, Inc.	01/02/2000	31/12/2001	01/02/2000	31/12/2001			Y			
Core	Trade Publication	1050-012X	**World Broadcast News**	Penton Media, Inc.	01/03/1999	31/01/2000	01/03/1999	31/01/2000						
Core	Academic Journal	2221-0741	**World of Computer Science & Information Technology Journal**	Mauz Conti	01/07/2012		01/07/2012			Y	Y			
Core	Trade Publication	0043-8790	**World Oil**	Euromoney Institutional Investor PLC	01/12/1947		01/08/1993		0.9		Y		01/07/1973	
Core	Academic Journal	0172-2190	**World Patent Information**	Pergamon Press - An Imprint of Elsevier Science	01/01/2002					Y				
Priority	Trade Publication	1054-8637	**World Trade**	BNP Media	01/08/1939	01/08/1939								
Core	Trade Publication	1064-8429	**World Wastes**	Penton Media, Inc.	01/02/1992	28/02/1999	01/01/1997	28/02/1999			Y			
Core	Academic Journal	1386-145X	**World Wide Web**	Springer Science & Business Media B.V.	01/01/2007					Y				
Priority	Magazine		**Worlds Markets**	Journal Collection (H.W. Wilson)	02/08/1920	01/05/1924								
Core	Trade Publication		**Worldwide Databases**	Worldwide Videotex	01/07/1999		01/07/1999				Y			
Core	Academic Journal	1687-7632	**X-Rays Optics & Instrumentation**	Hindawi Publishing Corporation	01/01/2008		01/01/2008			Y	Y	Y		
Core	Magazine	1088-0070	**Yahoo! Internet Life**	Ziff Davis, Inc.	01/12/2000	31/08/2002	01/12/2000	31/08/2002			Y			
Core	Academic Journal	0354-0243	**Yugoslav Journal of Operations Research**	Belgrade University, Faculty of Organizational Sciences	01/12/2012		01/12/2012			Y	Y			
Core	Academic Journal	0044-2267	**ZAMM – Journal of Applied Mathematics & Mechanics / Zeitschrift für Angewandte Mathematik und Mechanik**	John Wiley & Sons, Inc.	01/01/1998		01/01/1998		12	Y	Y	Y	01/01/2008	
Priority	Magazine		**Zeitschrift fur Angewandte Chemie**	Journal Collection (H.W. Wilson)	06/01/1927	30/04/1932								
Core	Academic Journal	0044-2275	**Zeitschrift für Angewandte Mathematik und Physik (ZAMP)**	Springer Science & Business Media B.V.	01/01/2007					Y				
Core	Magazine	1535-9891	**Ziff Davis Smart Business**	Ziff Davis, Inc.	01/05/2001	30/06/2002	01/05/2001	30/06/2002			Y			
Core	Magazine	1528-4034	**Ziff Davis Smart Business for the New Economy**	Ziff Davis, Inc.	01/05/2000	30/04/2001	01/05/2000	30/04/2001			Y			

Databasa of Indexing & Abstracting of Journal of Applied Science and Technology (JAST)		
N° d'ordre	**Base de données**	**Adresses en Ligne**
1	**AJOL**	http://www.ajol.info/index.php/jast/about/editorialPolicies#focusAndScope
2	**EBSCO**	http://www.ebscohost.com/titleLists/aci-coverage.xls http://www.ebscohost.com/titleLists/aci-coverage.pdf ; (Rechercher : JAST)
3	**OCLC worldcat**	http://www.worldcat.org/title/journal-of-applied-science-and-technology-jast/oclc/602876858&referer=brief_results
4	**Google Scholar**	http://scholar.google.com/ ; (Abstracting : Rechercher l'article par son titre)
5	**Genamics Journalseek**	http://journalseek.net/cgi-bin/journalseek/journalsearch.cgi?field= issn&query =0855-2215
6	**African e-Journals Project**	http://africa.isp.msu.edu/AEJP/journal.htm?id=2191
7	**Crossref**	http://www.crossref.org/titleList/; (Rechercher par l'ISSN 0855-2215)

CAS Source Index (CASSI) Search Result

Displaying Record for Publication: Journal of Applied Science & Technology

Entry Type	Active Serial
Title	Journal of Applied Science & Technology
Abbreviated Title	J. Appl. Sci. Technol.
CODEN	JASTGG
ISSN	0855-2215
Language of Text	English
Summaries In	English
History	1996?+
Publisher Name	Council for Scientific and Industrial Research, Industry, Natural & Social Sciences Sector

Disclaimer

Journal of Applied Science and Technology (JAST), Vol. 18, Nos. 1 & 2, 2013, pp. 8 - 13

MODELING RHEOLOGY OF ISOTHERMAL FLOW OF CARBOXYMETHYL-CELLULOSE-ALGINATE SUSPENSION IN A HORIZONTAL CONDUIT

B.F.Z. Fagla, M. Gradeck † C. Baravian † and M. Lebouche †
Laboratoire d'Energétique et de Mécanique Appliquées (LEMA), Ecole Polytechnique d'Abomey-Calavi, Université d'Abomey-Calavi 01 B.P. 2009 Cotonou, Bénin
† Laboratoire d'Energétique et de Mécanique Théorique et Appliquée (LEMTA), INPL/UHP 2, Avenue de la forêt de Hayes BP 160 54504 Vandœuvre-lès-Nancy Cedex, France

ABSTRACT

The rheology of isothermal flow of Carboxymethylcellulose (CMC) solution at 0.5 % mass concentration and loaded with spherical alginate particles was modeled and analysed. A carrier fluid flow model of solid-liquid pseudoplastic Non-Newtonian suspension in a horizontal pipe governed by constitutive power law of Ostwald Wan der Waal was found not applicable to the range of experimental shearing rates of the flow regime of CMC-alginate suspension. Therefore, a new model based on the effect of dynamic viscosity on concentration of the spherical particles in Newtonian flow regimes in relation to Brownian activated motion and hydrodynamics was developed to account for zero shear viscosity and resolve other physical limitations. Upon validation, the dynamic viscosity model fitted the experimental data of the shearing rates.

1. INTRODUCTION

Convenient foods, such as milky desserts, sauces, yoghourts, etc., have complex rheological properties and exhibit non-Newtonian flow, as the fluids are loaded with particulate matter, which modify the hydrodynamics and thermal efficiency of the carrier fluid flow. To evaluate the time-temperature dependent properties, physico-chemical transformations, and heating and cooling conditions of suspension of multi-phases for different flow regimes require modeling of the rheology.

The mechanisms of mass transfer between the loaded fluid and vessel wall and between the liquid and particles were analysed by mathematical modeling. The factors influencing transportation of loaded liquids and transfer of heat in the suspensions are the nature, concentration and hydraulic diameter of particles, fluid-particle density, flow regime, and rheological characteristics of the fluid carriers [1]. Since the flow characteristics of non-Newtonian fluids loaded with hard spheres in a tube are complex, many studies have been conducted to clarify the phenomena.

The four main regimes of suspension flow are symmetrical flow, asymmetric flow, circulating bed and stationary bed flows which are functions of the average velocity of the suspension and limiting velocity of the particles [2, 3]. In estimating the normal stresses in suspension flows, the tensor of straight flow gave expressions for the normal stress arising from the particle pressure [4].

In non-isotropic flow of suspensions, the differences in normal stress did not affect only curvilinear flows, but also linear flows, where the effects are manifested by migration rates and concentration profiles of Poiseuille flow [5]. The turbulent wall-bounded flows (i.e., boundary layer, pipe and channel flows) present additional measurement challenges relative to free shear turbulent flows [6]. The physical presence of the wall, limitations and stress imposed on applying sensor techniques create some of the challenges [7].

The mass transfer at moderate Reynolds and Peclet numbers from ensembles of Newtonian fluids with spheres indicated that the effect of viscosity on the local and average Sherwood number was less significant for small values of Peclet number for all values of dispersed phase concentration [7]. As the value of viscosity increased, the average Sherwood number decreased for droplet concentration and Reynolds number. In experimental studies of particle-wall collisions in viscoelastic fluids, spheres were released into a tank filled with polyethylene oxide (PEO) mixed with water at varying concentrations up to 1.5 %, and the increase of coefficient of restitution with Stokes number was smaller for higher Deborah number. Also higher rebound occurred for high PEO concentration at the same Stokes number [8].

The hydrodynamics of fluids loaded with particles are governed by transport laws

and heating of the mixture. The dynamic viscosity (η) of the carrier fluid depends on Peclet hydrodynamic number, particle volume fraction (ϕ), Deborah number and viscosity of the suspension fluid (η_o) [8].

In this paper, the limitations of hydrodynamics of small hard mono-dispersed spheres in carboxy-methylcellulose (CMC) suspensions of pseudoplastic non-Newtonian diphasic flow regimes in a horizontal tube governed by Ostwald Wan der Waal power law were analysed. The model was not completely applicable in the range of the shearing rates expected. Therefore, a new model based on dynamic viscosity (η) in relation to parameters of Brownian motion and hydrodynamics of CMC-alginate suspension (particle volume fraction, shear rates and characteristic time of particle displacement) was developed and validated.

2. RHEOLOGY OF CMC SOLUTION

The CMC (CH_2COONa) cellulosique ether solution was obtained in the form of sodium salt by reaction of monochloracetate of sodium with sodicocellulose.

The effects of concentration and temperature on rheology of CMC solutions were investigated, and deterioration by thermo-mechanical effects was observed, as the solutions became damaged at temperatures $\geq$ 65°C [9].

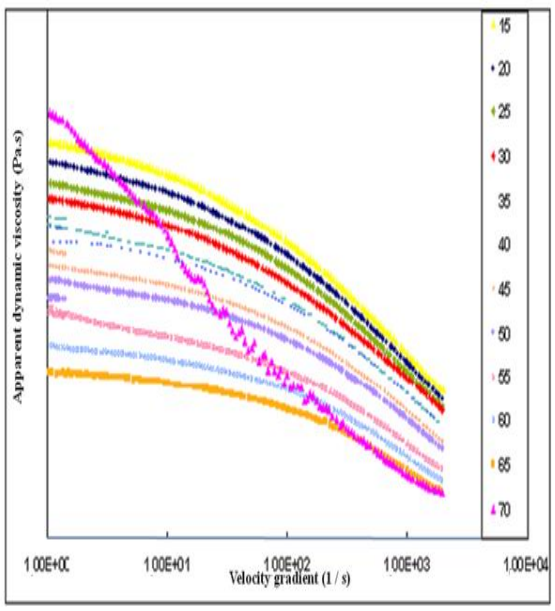

Fig. 1. Evolution of apparent dynamic viscosity as function of velocity gradient and temperature (illustrating degradation of the CMC concentrated solution at 0.5 % at temperature $\geq$ 65 °C)

Figure 1 illustrates the evolution of CMC dynamic viscosity as a function of temperature. From 20 ° C to 60 ° C, the behavior was governed by the same constitutive law, but at temperatures $\geq$ 65 ° C, the evolution obeyed a different law. The change was attributed to degradation linked to temperature increase; whereby, heating above 65 °C degraded the rheological properties. Therefore, the CMC solution remained stable up to 60 °C, beyond which there was structural deterioration.

3. RHEOLOGICAL BEHAVIOUR OF CMC-ALGINATE SUSPENSIONS

Smaller particles in comparison with bigger particles would behave as rolling balls, while the bigger particles ensured more interactions that influenced pressure drop in the suspensions. For first approximation, if the alginate size was bigger than CMC molecular size, i.e. 4.4 mm $>>$ 5.0293 x 10^{-8} m, the CMC was considered as a homogeneous fluid.

The alginate solid phases were hard spheres of 4.4 mm average diameter produced by the method reported by Fagla *et. al.* [10].

The CMC-alginate suspension was considered as non-Newtonian of pseudoplastic characteristics, with density ρ = 888.25 kg/m^3, specific heat C_p = 4.18 kJ/(kg K) and thermal conductivity λ = 0.6 W m^{-1} K^{-1} at 20 °C; which were identical to the values for water (at precision of 1 - 3 %) [11 - 13]. The fluid was a colloidal suspension of very fine particles, transparent and facilitated the use of Laser Doppler Anemometry**.** Copper sulphate was used as a preservative.

3.1. Quemada Effective Viscosity

For suspensions with large sized particles in isothermal flow where the carrier fluids were non-Newtonian with viscosity variation, the effective viscosity of the suspension (η_{eff}) was deduced by Quemada for hard spheres at constant flow rate of 2.49 m/s [12]. In analysing non-Newtonian suspensions of hard spheres as continuous medium, η_{eff} was expressed as a function of the suspension viscosity (η_o) and volume fraction of particles (ϕ) [13, 14],

$$\eta_{eff} = \eta_0 \left(1 - \frac{\phi}{\phi_p}\right)^{-2} \quad (1)$$

where maximum volume fraction ϕ_p = 0.64 and ϕ/ϕ_p is maximum stacking fraction.

Another calculation of η_{eff} was based on generalized Reynolds number where the viscosity was modified by correction factor to the Quemada model, and the suspensions were considered as effective media leading to unexpected shift at 5 % volume fraction. The observation implied that the suspensions with hard spherical particles behaved as binomial suspensions with particles of two different sizes.

The flow of heavily loaded spherical particles of 4.4 mm diameter in mono dispersed suspensions of 1.0, 5.0 and 7.0 % volume fractions (0 % as control) of alginate particle in CMC had also been characterized by the friction coefficient, based on Reynolds number and viscosity of the carrier fluid [12].

3.2. Pseudoplastic Flow Model

The pseudoplastic non-Newtonian fluid behavior is governed by the power law,

$$\tau = K\dot{\gamma}^n \quad (2)$$

where τ is shear stress, K is consistency index, n is structural index and $\dot{\gamma}$ is shear stress; applicable in the range $0.1 < \dot{\gamma} < 30\ s^{-1}$. The pseudoplastic behaviour could be attributed to modification of the CMC molecular structure under the action of strong shearing, as illustrated by the two plots shown in Fig. 2. The experimental data in Fig. 3 was also correlated by exponential fit to K and n as,

$$K = A\exp(-aT) \quad (3)$$

$$n = B\exp(-bT) \quad (4)$$

where for 0.5 % concentrated CMC $K = 2.4273e^{-0.028T}$ and $n = 0.4895e^{0.0041T}$.

Depending on preparation of CMC, the laws of variation K(T) and n(T) could be different, and new relations have to be established for each new sample by new rheograms to account for evolution of the product.

By analyzing the pressure drop of monophasic CMC in a laminar isothermal flow, the relationship between the coefficient of friction (C_f) and generalized Reynold number (R_{eg}) was given by the Poiseuille formula,

$C_f = \frac{16}{R_{eg}}$ [12].

To overcome the pseudoplastic non-Newtonian characteristics, a new rheology model was developed to account for the Newtonian character of CMC-alginate suspension, and to reduce shearing with applicability to a wider range of laboratory shearing rates.

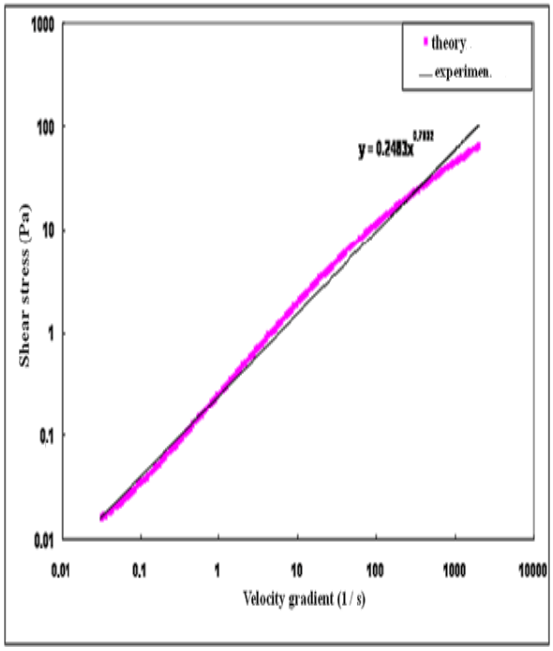

Fig. 2. Rheograms of 0.5 % CMC solution at temperature of 20 °C.

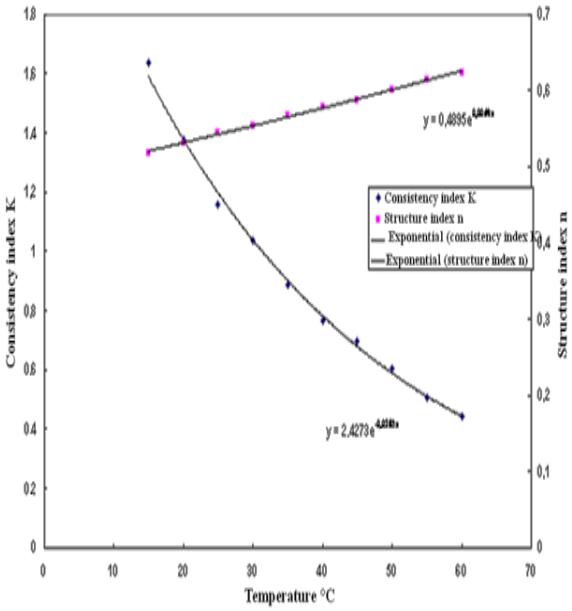

Fig.3. Consistency index K and structure index n of the CMC at different temperatures

4. MODELLING RHEOLOGY OF CMC-ALGINATE SUSPENSION

4.1. Dynamic Viscosity-Newtonian Flow

To overcome some of the limitations of pseudoplastic flow model, the influence of the particles on pressure drop for CMC-alginate suspension flow was investigated and the dynamic viscosity (η) relation established was,

$$\eta = \frac{\eta_0}{1+(t_c\dot{\gamma}_p)^{0.5}} \quad (5)$$

where η_o is suspension fluid viscosity, $\dot{\gamma}_p$ is shear rate at conduit wall and t_c is characteristic time of particle displacement. At 20 °C, and zero shear rate, η_o = 0.3149 Pa s, t_c = 0.032 s, hence

$$\eta = \frac{0.3149}{1+(0.032\dot{\gamma}_p)^{0.5}} \quad (6)$$

Equations (5 and 6) represented rheological behavior of CMC-alginate suspension, where $\dot{\gamma}_c = 1/t_c$ is critical shear rate. The model provided good fit to the experimental data as shown in Fig. 4.

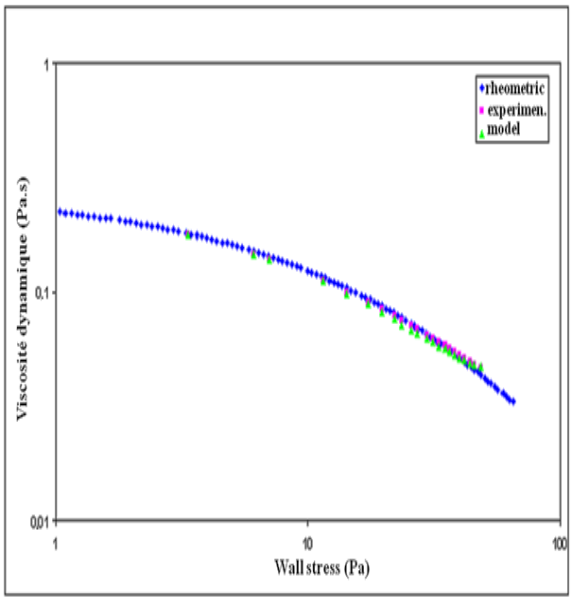

Fig. 4. Values of CMC viscosity obtained by the dynamic viscosity and experiments at 20 °C.

4.2. Brownian Motion and Hydrodynamics

At low rate of shearing, the thermal motions of the fluid molecules were dominant and the suspension fluid viscosity followed thermal activation process expressed as,

$$\eta_o = A\exp(-\frac{kT}{E}) \quad (7)$$

where A is fluid constant, k is Boltzmann constant, T is absolute temperature, and E is associated energy term,

$$E = 6\pi a\eta \quad (8)$$

with a as radius of alginate spherical particles

At the critical shear stress, $\tau_c = \eta_o\dot{\gamma}_c$, = η_o/t_c and high shearing rate, the hydrodynamic streamlined interactions dominated the flow. The critical shear stress was a balance between Brownian thermal energy and hydrodynamic energy, and was proportional to k/a^3. If t_c was proportional to $\eta a^3/(kT)$, then [9],

$$t_c = B + \frac{\eta_o a^3}{kT} \quad (9)$$

where B is constant related to CMC. The Peclet number (Pe) was given by the relation $P_e = \eta\dot{\gamma}a^3/(kT)$ with $P_e = \sigma/\tau_c$, $\tau_c = kT/a^3$, $\dot{\gamma}_c = kT/\eta a^3$, and σ is applied stress; such that the time duration for Brownian motion was

$$t_{Br} = \frac{6\pi\eta a^3}{kT} \quad (10)$$

Therefore, the general relationship for the dynamic viscosity from Brownian thermal motions and hydrodynamic interactions was given as [9],

$$\eta = A\exp\left(-\frac{kT}{E}\right)\left(\frac{1}{1+(t_c\dot{\gamma}_p)^p}\right) \quad (11)$$

where constant p = 0.5. The dynamic viscosity model eqn. (12) was analyzed using the parameters A= 0.1808, a = 5.0293 x 10^{-8} m, η_o = 0.3149Pa s at 20 °C; hence η = 0.2227 Pa s.

The dynamic viscosity model was validated by determining the zero shear viscosity of two preparations of CMC at 0.0 % (control) and 0.5.0 % concentration. Evolution of the zero shear viscosity decreased with temperature as shown in Fig. 5 [15]. The stress increased with temperature in accordance with the Newtonian flow model for which the rheograms **(**Fig. 5) showed that Ostwald law could not be applicable for the entire range of shearing velocity gradient.

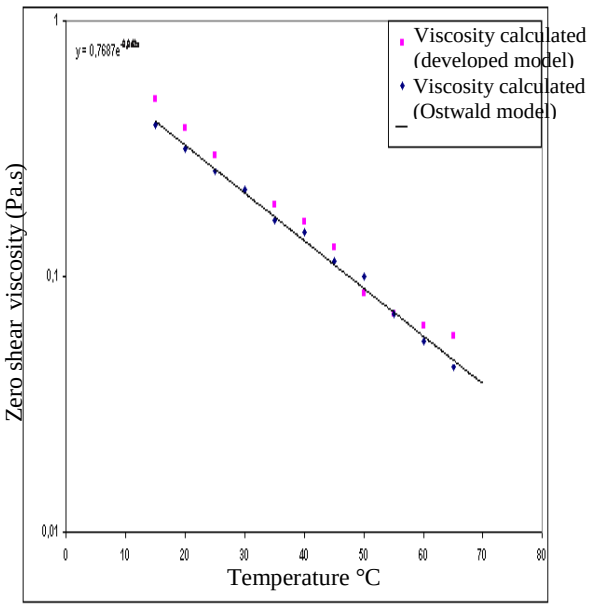

Fig. 5. Evolution of zero shear viscosity as a function of temperature of 0.5 % CMC determined by Ostward power law and dynamic viscosity-Newtonian model.

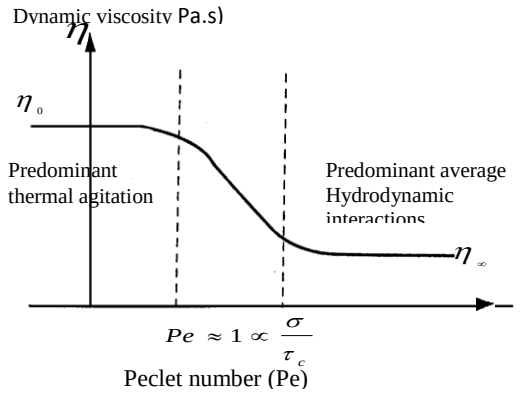

Fig. 6. Evolution of dynamic viscosity as a function of Peclet number (illustrating thermal agitation of particles and hydrodynamic interactions).

The change of η_o from thermal motion until intervention of hydrodynamics at η_∞ is shown in Fig. 6. At Peclet number Pe = 1, the slope k/a^2 was proportional to the ratio σ/τ_c [9].

4. RESULTS

4.1. Pseudoplastic Flow

The model equation of pseudoplastic rheological behavior of CMC suspension was given by a dynamic viscosity function of the form,

$$\eta = \frac{0.3149}{1+(t_c \dot{\gamma}_p)^{0.5}} \qquad (6)$$

where $\dot{\gamma}_p$ is rate of shearing at wall, $t_c = 1/\dot{\gamma}_c$ is characteristic time of displacement of suspended particle motion and $\eta_0 = 0.3149$ Pa s.

In Fig. 7, the plot of coefficient of friction of monophasic isothermal CMC was superimposed on the data of the suspension at 1 % and the two curves were slightly offset from the main curve due to warming-up by viscous dissipation of the carrier fluid. The plots for 5 % and 7 % particle suspension deviated from the main curve; with the difference for 7 % being greater than 5 % carrier fluids. The presence of the particles in the mixture was the basis of the observed differences in Fig. 7.

4.2. Newtonian Flow

The model equation developed (based on effect dynamic viscosity on concentration of suspended particles) was of the from,

$$\eta = A\exp\left(-\frac{kT}{E}\right)\left(\frac{1}{1+(t_c \dot{\gamma}_p)^p}\right) \qquad (11)$$

and accounted for Newtonian character of CMC and reduced shearing.

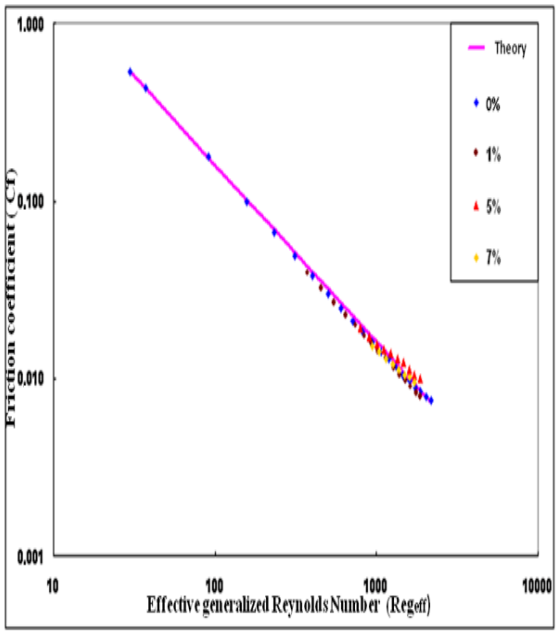

Fig. 7. Coefficient of friction of suspension at different volume fractions as function of effective generalized Reynolds number compared with Quemada model.

5. DISCUSSION

The rheogram obtained for the CMC showed that the model of Ostwald could not be validated for the whole range of shearing velocity gradient, suggesting CMC was a complex Newtonian fluid, where the flow could not be governed by pseudo-plastic power law.

The rheophysical analysis of the fluid indicated orientation of the molecules in the direction of the shearing, for the fluid dynamic viscosity in the whole range of the shearing rate (from zero up to the highest shearing rate). At low shearing rate, the thermal agitations of the fluid molecules were dominant and could be represented by pseudoplastic model with suspension fluid viscosity of $\eta_o = 0.3149$ Pa s.

6. CONCLUSIONS

A new model representing the dynamic viscosity-Newtonian behaviour of the CMC-alginate suspension has been developed to overcome the limitations imposed by pseudo-plastic flow power law. The power law model accounted for pseudoplastic behavior with temperature dependence, but was only valid for limited range of the shearing rates imposed, and also could not account for the effects of concentration of the alginate particles.

The dynamic viscosity model develop-

ed for CMC rheological behavior considered the concentration of alginate particles and covered the entire range of shearing rates imposed and also incorporated Brownian thermal activation and hydrodynamics. The model gave values of dynamic viscosity of the suspensions at zero shearing and ambient temperature comparable with the experimental data over the measured shearing rates.

7. REFERENCES

1. Hoareau F., Etude dynamique et thermique de suspensions solides-liquides non-newtoniennes en conduit, *Thèse Mécanique-Energétique Université de Nancy* I France, 1996.
2. Chhabra R.P., Motion of spheres in power law (visci-inelastic) fluids at intermediate Reynolds numbers: an unified approach. *Chem. Eng. Process*, Vol. 28, No. 2, 1990, pp. 89 - 94.
3. Kyokai O., Trajectory and diffusion of particles in liquid-solid flow of slurry pipeline. *Journal of Pipelines*, Vol. 1, No. 4, 1981, pp. 307 – 318.
4. Zarraga I.E., Hill D.A. and Leighton Jr. D.T., The characterization of the total stress of concentrated suspensions of noncolloidal sphères in Newtonian fluids, *J. Rheol.*, Vol. 44, 2000, pp. 185 – 2204.
5. Fang Z., Mammoli A. A., Brady J. F., Ingber M.S., Mondy L.A. and Graham, A.L., Flow-aligned tensor models for suspension flows, *Intern. J. Multiphase Flow*, No. 28, 2002, pp. 137 - 166.
6. Klewicki J., Saric W., Marusic I. and Eaton J., Wall-bounded flows, *Springer Handbook of Experimental Fluid Mechanics*, 2007, pp. 871 – 907.
7. Kishore N., Chhabra R.P. and Eswaran V., Mass transfer from ensembles of Newtonian fluid spheres at moderate Reynolds and Peclet numbers, *Chemical Engineering Research & Design* , Vol. 85, No. 8, 2007, pp. 1203 – 1214.
8. Ardekani A.M., Joseph D.D., Dunn-Rankin D. and Rangel R.H., Particle-wall collision in a viscoelastic fluid, *J. Fluid Mech.*, Vol. 633, 2009, pp. 475 - 483.
9. Fagla F.Z.B., Etude thermomécanique de suspensions solide-liquide newtonienne et non newtonienne en écoulement dans une conduite horizontale, *Thèse en Mécanique-Energétique INPL*. Vandoeuvre-lès-Nancy, France, 2002.
10. Fagla B., Gradeck M.G. and Lebouche M., Experiments on rheology of non-Newtonian flow of tylose-alginate suspensions through a horizontal complex conduit, *J. Appl. Sci. and Technol.*, Vol. 18, Nos. 1 & 2, 2013, pp. xx - yy
11. Lee W.Y., Cho, Y.I. and Hartnett, J.P., Thermal conductivity measurements of Non Newtonians fluids, *Letters in Heat and Mass Transfer*, Vol. 8, No. 4, 1981.
12. Antonini G., Pain J. P. and Napitupulu F., Sonde de mesure in situ de la conductivité thermique dans les suspensions solide liquide concentrées, *Séminaire Thermique des Liquides Complexes*, Vol. 4, 1984, pp. 157 - 167.
13. Scirocco V., Convection thermique pour un fluiude pseudoplastique en conduite cylindrique. *Thèse de doctorat-Ingénieur*, Université de Nancy I. 1985.
14. Quemada D., Rheological modelling of complex fluid I, The concept of effective volume fraction revisited, *Eur. Phys. J. AP*, Vol. 1, 1998, pp. 119 - 127.
15. Fagla F.Z.B., Gradeck M, Baravian C. and Lebouché M., Ecoulement de suspensions solides-liquides, Rhéologie, in *Proc., XVème Congrès Français de Mécanique*, 2001, pp. 217 - 223.
14. Fagla F.Z.B., Gradeck M., Baravian C. and Lebouché M., Etude expérimentale de l'hydrodynamique des suspensions non newtoniennes de grosses particules dans une conduite horizontale, *Annales des Sciences Agronomiques*, Vol.15, No. 1, 2011, pp. 139-157