

High Performance and Specialty Fibres - Web course

COURSE DETAIL

Module	Modules and Topics	Lecture No	No. of hours
1	Module 1 : General introduction and Development of High Performance Fibres		2
	Chapter 1.1: Introduction to high performance and specialty fibres And development of high performance fibres	1,2	2
2	Module 2 : High Strength High Modulus Fibres		15
	Chapter 2.1: Aramids: Polymerization, spinning and properties of aromatic polyamides	3-5	3
	Chapter 2.2: Other rigid rod polymers such as PBZT, PBO, PBI.	6,7	2
	Chapter 2.3: Melt spun wholly aromatic polyester	8	1
	Chapter 2.4: Manufacturing of carbon fibres from PAN precursors, viscose and pitch fibres.	9-14	6
	Chapter 2.5: Gel spun PE fibres	15-17	3
3	Module 3 : Resistant Fibres		4
	Chapter 3.1: Thermally resistant fibres	18,19	2
	Chapter 3.2: Chemically Resistant fibres	20,21	2
4	Module 4 : Inorganic Fibres		4
	Chapter 4.1: Glass fibre	22,23	2
	Chapter 4.2: Ceramic fibre	24,25	2



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Textile Engineering

Pre-requisites:

Introduction to Fibres, Structure and Physical Properties of Fibres and Manufactured Fibre Technology.

Additional Reading:

1. Manufactured fibre Technology, V. B. Gupta and V.K. Kothari.
2. Mukhopadhyay S K, 'High-performance fibres', Textile Progress, 1993, 25, 1-85.
3. Yang H H, Kevlar Aramid Fiber, Wiley & Sons, New York, 1993.
4. Ozawa S and Matsuda K, High Technology Fibers Part B, edited by Lewin M and Preston J, Marcel Dekker, New York, 1989.

Coordinators:

Dr. Manjeet Jassal

5	Module 5 : Other Performance Fibres		4
	Chapter 5.1: Elastomeric fibres	26,27	2
	Chapter 5.2: Lyocell fibre	28,29	2
6	Module 6 : Fibres for Medical Applications		4
	Chapter 6.1: Biodegradable fibres based on PLLA	30,31	2
	Chapter 6.2: Absorbent fibres	32,33	2
7	Module 7 : Smart/ Functional Specialty Fibres		9
	Chapter 7.1: Stimuli responsive and Smart textiles	34-37	4
	Chapter 7.2: Non circular/ hollow fibres	38	1
	Chapter 7.2: Bicomponent and other specialty fibres-	39,40	2
	Chapter 7.3: Electrospun Nanofibres	41,42	2

References:

1. High Performance fibres J W S Hearle.
2. Textile fibres: Developments and Innovations, V. K. Kothari.
3. Physical properties of fibres J W S Hearle and W E Morton.
4. David R. Salem. (Eds). Structure Formation in Polymeric Fibres. Carl Hanser Verlag, Germany, 2001.
5. Yang H H, Kevlar aramid fiber, John Wiley & Sons, Chichester, 1993.
6. Tao X (editor), Smart fibres, fabrics and clothing, Woodhead Publishing Ltd, Cambridge, 2001.