

letter from the Editor

Research Briefs and NTC Annual Reports -- Searchable in Cyberspace

This *Research Brief* is also available electronically on our World Wide Web site at <http://ntc.tx.ncsu.edu> for you to download or E-mail to someone else. In fact, all *NTC Research Briefs* and *NTC Annual Reports* that have issued since December 1993 are on the NTC Web site. Once you get to the site you can find the report you are looking for in two ways. First, they are organized the same way the paper copies are -- click on *Research Briefs*, then on the report you want to read or download. Secondly, you can now search all the reports at once or limit your search to just one report. At the initial NTC home page, click on *Search Engine*. *You* will be asked to enter a keyword or several keywords connected with "and" or "or" [Yes, you have some Boolean logic capability!]. You can also ask to include synonyms of your keywords and for all words containing your keyword. For example, a search for "apparel and sew" found 18 "apparel" articles where 16 contained the words "sew", "sewn" or "sewing" and one each with "sewage" and "elsewhere". So give it a try!

"Talk" to Us:

As you read this issue of *Research Briefs* you might have a question or simply want to find out more about an NTC project. As well as checking out the longer, more detailed annual report on the Web, we encourage you to telephone the NTC primary investigators directly or to write them on E-mail. See the inside back cover for telephone numbers and E-mail addresses.

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Material Science

Research in the design, development, manufacture and measurement of natural and synthetic polymers and fibers, including polymer mixtures and additives.

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| By inducing chaotic mixing in the melt, we can extrude filaments with intrinsic fibrous reinforcement. [C96-1] | |
| Rapid Solidification of Polymeric Fibers | 2 |
| We are developing macroscopic and molecular models for the rapid directional solidification of polymeric fibers. [G96-19] | |
| Low Cost, Tough Industrial Fiber | 3 |
| We are synthesizing synthetic spider dragline silk based on liquid crystal technology and solid state polymerization of nylon and polyester. [G95-8] | |

Molecular Structure of High Tech Fibers	3
An understanding of molecular microstructure is necessary to produce fiber of high mechanical strength and electrical conductivity. [C95-4]	
Using Biotechnology for New Fibers	4
Using microbes, we have produced novel polypeptide structures which show promise of being melt-extrudable into fibers. [A96-2]	
Fiber Microstructure and Fatigue	5
We are assessing cyclic bending and torsional damage accumulation in fiber structure and seeking ways to minimize fatigue in tire cord fibers. [S94-2]	
Designing Molecules Using Molecular Orbital Theory	6
We are designing textile fibers, dye molecules and chemical auxiliaries by computer and have spun a modified PBZT polymer so designed. [S95-22]	

Fabrication

Research in the design, development, manufacture and measurement of fibrous structures, including yarns, textiles, garments, nonwovens, carpets, coated fabrics, papers, preforms, etc.

Computer Aided Apparel Equipment Design	8
We are applying computer-aided-engineering techniques to develop precise fabric handling capabilities for apparel assembly processes. [S95-20]	
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We are developing a system to measure yarn and fabric tension and fabric bending properties on-line. [A96-4]	
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- Enzymatic Dyeing and Finishing** 17
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We are developing a fundamental understanding of the mechanisms of ultrasonic-assisted textile wet processing. [G95-13]
- Quick Response Printing** 22
We are developing electrophotographic and inkjet dry printing processes for quickly applying complex patterns to textile substrates without effluent. [G95-1]

Intelligent Systems

Research in systems to enable rapid response, including computer modeling, sensor technology, expert systems, customer interactive design, market research and demand-activated, closed-loop production systems.

- Artificial Life Simulation of Textile/Apparel Marketplace** 24
We are examining the complex self-organizing system of the textile/apparel marketplace to detect patterns in emerging behaviors. [A95-20]
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