JOURNAL OF Applied Polymer SCIENCE

Fibers in Polymer-Based Materials

Fibers come in a bewildering variety of components, sizes and origins. The common thread, pun not intended, of this special issue of the *Journal of Applied Polymer Science* is the exploration of the unique characteristics that fibers' aspect ratios, compositions and properties bring to the table for polymer-based materials applications.

Both natural and synthetic fibers can be used to reinforce composites. An example of the first kind is found in two articles[1,2] by Richard Wool and co-workers (which you can read here and here) using fibers from chicken feathers to reinforce polymeric matrices. Remaining in theme of poultry feathers, a paper from Drzal and coworkers.[3] is also presented on the subject. On the opposite end of the spectrum, synthetic fibers, for example electrospun nanofibers, can be used to reinforce hydrogels for tissue engineering, as in the article by Thorvaldsson et al.[4]

Aside from their structural reinforcing properties, fibers are also used to impart specific functionalities to materials, for example, electrical conduction: an example of the latter is shown in the paper by Wu et al.[5] Membranes cast from nanofibers have also been used in nanofiltration and several other applications, for example in antibacterial wound dressings as shown by Zhang and coworkers.[6]

The textile industry's main products are of course fibers, and the wastes of these productions can sometimes be reused to further develop advanced materials, as shown by Alam and Mondal.[7]

In some cases, producing polymeric fibers from a specific polymer is complicated by the fact that the polymer in question might be difficult to process. As Xu and coworkers[8] show, lyotropic liquid crystals can help in the production of poly(ether ether ketone) fibers.

We believe that a large section of the spectrum of research in polymer-based materials containing fibers is represented in every issue of the *Journal of Applied Polymer Science*. This special issue is a showcase of the breadth of our coverage of the field, and we are sure it has something for every palate.

Stefano Tonzani
Editor-in-Chief
Journal of Applied Polymer Science

REFERENCES

1. Senoz, E.; Stanzione, J. F., III; Reno, K. H.; Wool, R. P.; Miller M. E. N. *J. Appl. Polym. Sci.* DOI: 10.1002/app.38163
2. Zhan, M. J.; Wool R. P. *J. Appl. Polym. Sci.* DOI: 10.1002/app.38142
3. Huda, M. S.; Schmidt, W. F.; Misra, M.; Drzal L. T. *J. Appl. Polym. Sci.* DOI: 10.1002/app.38306.
4. Thorvaldsson, A.; Silva-Correia, J.; Oliveira, J. M.; Reis, R. L.; Gatenholm, P.; Walkenström P. *J. Appl. Polym. Sci.* DOI: 10.1002/app.38316
5. Wu, G. L.; Kou, K. C.; Li, N.; Shi, H. L.; Chao M. *J. Appl. Polym. Sci.* DOI: 10.1002/app.38348.
6. Lu, A.; Ma, Z. C.; Zhuo, J. Y.; Sun, G.; Zhang G. D. *J. Appl. Polym. Sci.* DOI: 10.1002/app.38131.
7. Alam, A. B. M. F.; Mondal M. I. H. *J. Appl. Polym. Sci.* DOI: 10.1002/app.38446.
8. Wu, T.; Liu, P. Q.; Wang, X.; Zeng, L. X.; Ye, G. D.; Xu J. J. *J. Appl. Polym. Sci.* DOI: 10.1002/app.38338.