



Harvard Research Experience for Teachers

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Polymer Playground: From Rubber to Kevlar

Teaching about polymers in the classroom requires a foundation of organic chemistry and science history. This is valuable to the development of a unit on polymers that encompasses historical discoveries leading up to today's research and development.

In collaboration with DEAS, professors, doctors and post-docs assist teachers in experiences and material to take back to the classroom. On occasion a teacher has the opportunity to work on the Annual Holiday Lecture that Harvard gives to the public.



Dr. Kathryn Hollar

Creating a presentation, lab protocols, and designing an information delivery platform allows the teacher to apply research in the classroom.

Increase understanding of research in the Department of Engineering & Applied Science

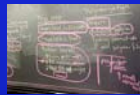
Increase awareness and application of research to every day science

Transfer the research experience into classroom applications

Become an active research scientist

Share research with other teachers

Goals



Polyvinyl foam Rosin plastic



Sarak Kazmi
Rejehah Raygoleh

Fiber Coating with Polymeric Solutions

Fiber coating applications exist in the communications and textile manufacturing fields. Much of this research is done in materials engineering, chemistry and physics. This research has the potential to increase durability, life and potential uses of the fibers.

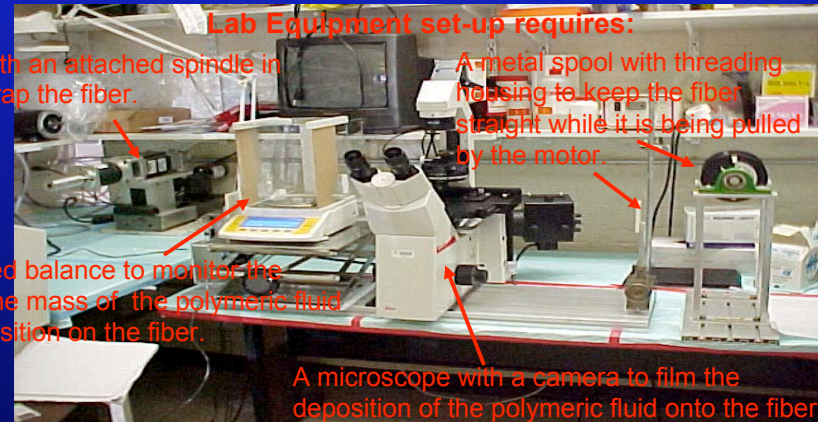


A motor with an attached spindle in order to wrap the fiber.

A metal spool with threading housing to keep the fiber straight while it is being pulled by the motor.

A chambered balance to monitor the change in the mass of the polymeric fluid due to deposition on the fiber.

A microscope with a camera to film the deposition of the polymeric fluid onto the fiber.



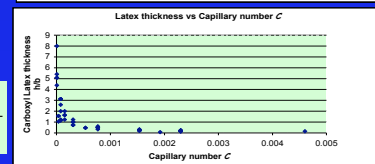
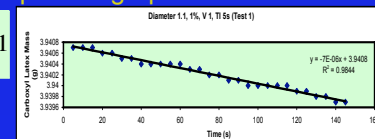
Lab Equipment set-up requires:

Computer programs regulate the speed of the motor and collect data from the balance during the experiment. The glass tube is filled with polymeric fluid after the fiber has been threaded through the tension brackets, glass tube and attached to the motor.

Collected data is then graphed and compiled to graph the h/b to the C .

$$\frac{h}{b} = \sqrt{1 + \frac{\delta m}{\rho \pi U b^2 \delta t}} - 1$$

$$C = \frac{\mu U}{\gamma}$$



Megalie Faivre

Kimberly Bickraj

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Dr. Manouk Abkarian