

M. Zhan (PhDChE) and R. P. Wool

University of Delaware . Center for Composite Materials . Department of Chemical Engineering

INTRODUCTION

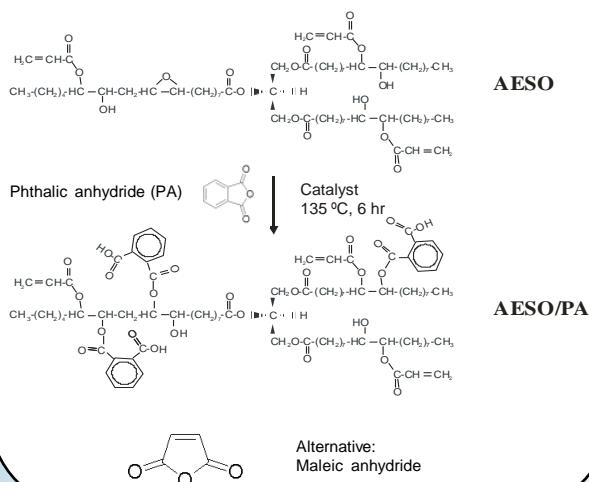
- Dielectrics are basic materials for printed circuit boards (PCB)
- Common dielectrics
 - Polymer matrices: polyimide, epoxy, polytetrafluoroethylene
 - Reinforcement: e-glass fibers, paper
- More than 70 wt% of PCB is dielectric



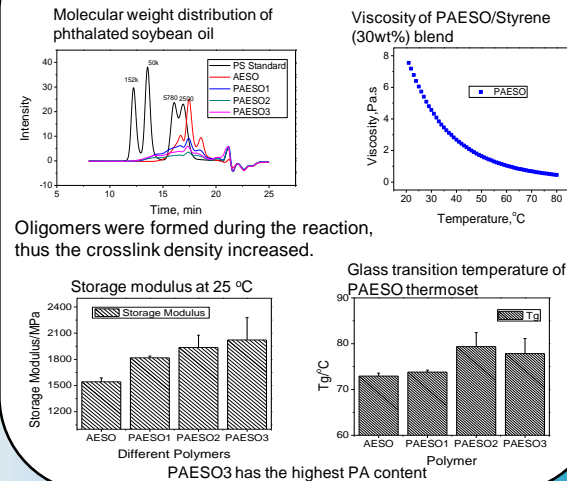
OBJECTIVES

- Using greener materials
 - Replacing petroleum-based materials by bio-based renewable materials
 - Replacing synthetic fibers with natural fibers
- Lowering dielectric constants
 - Decreasing the delay time of the electronic signals
 - Decreasing "cross-talk" effects between metal lines
- Lowering the price

SYNTHESIS



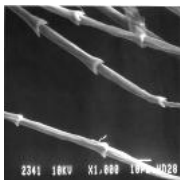
MONOMER AND POLYMER PROPERTIES



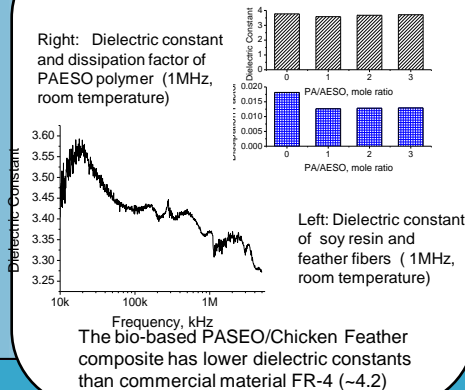
PAESO/CHICKEN FEATHER COMPOSITES

Polymer matrix: Phthalated Soybean Oil
 Good mechanical properties
 High functional groups
 Relative low polarity

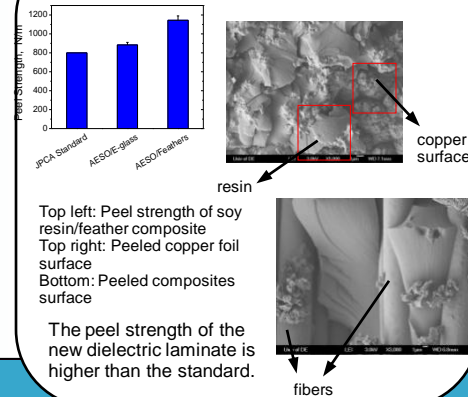
Fibers: Chicken feather fibers
 Reasonable strength
 High aspect ratio
 Low density
 High surface area
 Widely available
 Cheap



DIELECTRIC PROPERTIES

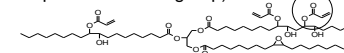


PEEL STRENGTH

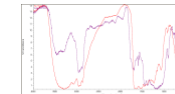


FUTURE WORK

Further modification of soy oil resin (introducing less polar functional group)



Heat treatment of carbonization of the fibers



Previous results (FTIR) showed that polarity of fibers decreased after heat treatment.

ACKNOWLEDGEMENTS

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