From melt to glass fiber

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Abstract

Glass fibers play a significant role in the green transition in various ways. Enhancing fiber performance necessitates optimizing the process of fiberization from glass melts. To realize this goal, we need to understand: 1) how fibers are formed; 2) how fiber structure changes during formation; and 3) how fiber properties are correlated with fiber forming history. Not every type of melt can be stretched into fibers, making the fiberization process both technologically and scientifically intriguing. In my lecture, I delve into these issues, discussing the dependence of glass fiber properties on both glass structure and fiber forming conditions. I also highlight the challenges encountered in developing high-performance glass fibers. Additionally, I touch upon the quantification of glass fiber spinnability. It should be mentioned that my lecture focuses on oxide glass fibers for both reinforcement and thermal insulation.

Keywords: Melt, Glass, Glass Fiber, Structure, Properties, Fiberization

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