MSE SEMINAR

April 21, 2017
113 McBryde Hall
3:30 – 4:30 PM
Refreshments at 3:00 PM

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"Devitrification kinetics of optical fibers at high temperatures"

Abstract

Durable sensing and monitoring systems based on optical fibers operating at high temperatures and in harsh environments are of high demand. One of the limitations of such systems is the devitrification of the fused silica based core and cladding glass at elevated temperatures; crystallites can nucleate on the surface of the cladding and grow into the core. The formation of these crystal flaws in the optical fiber causes stress concentration and extrinsic scattering which in turn leads to decreased mechanical properties and reduced optical stability. The details of the time and temperature dependence of crystal nucleation and growth in optical fibers are not fully understood; therefore, a comprehensive study of the kinetics of crystallite formation in these systems is required. Commercial optical fibers of different compositions were characterized using optical spectrum analyzer and their surface was investigated with SEM. Influence of heat treatment time, temperature, and atmosphere was demonstrated.

Biosketch

Anastasia Yakusheva is currently pursuing a MS in Materials Science and Engineering. She's been working under the supervision of Dr. Asryan on semiconductor quantum dot lasers and Dr. Pickrell on fiber optic sensor materials. She received her B.S. from ITMO University, Russia in 2015. Her research interests include optical materials and laser technology of materials processing.