Synthetic fused silica capillary, with its outer coating of durable polyimide, has become a widely used tool in the separation sciences. In this application note, we share recently acquired data on its optical properties, with a focus on fluorescence.

**EXPERIMENTAL**

The capillary tubing products used in this study included TSP050375 and TSP050375 with a 5mm long, laser ablated window (Polymicro Technologies, Phoenix, AZ). The specified coating thickness for these products is 20μm. Rhodamine B (Fisher Scientific, Pittsburgh, PA) was dissolved and diluted in water to form a 1mM solution and introduced into the capillary for use as a comparative fluorescence standard.

488nm laser light from a modified Microarray Scanner (Amersham Biosciences, Sunnyvale, CA) fitted with a 500μm core optical fiber assembly (Polymicro) was focused on the capillary outer surface at an incidence angle of 135°. The spot size was approximately 200μm and the measured power 1.39mW. Emitted light was routed to a USB 2000 Spectrometer (Ocean Optics Inc., Dunedin, FL) through a 600μm core fiber optic assembly (Polymicro) fitted with a 500nm cut-off filter (Amersham). Emission spectra were imported into Excel for display.

**RESULTS**

Spectra were collected from each of the following samples as described: A) the polyimide coating on TSP050375 with no solution inside, B) the detection window of TSP050375 with no solution inside, C) the detection window of TSP050375 filled with the Rhodamine B solution, and D) the polyimide coating on TSP050375 when filled with the Rhodamine B solution. The resulting fluorescence data collected is shown in Figure 1. Data suggests that the polyimide coating on TSP050375 yields a maximum emission intensity nearly equivalent to the emission from a 1mM Rhodamine B solution injected into the 50μm ID of that same capillary. Further, under these experimental conditions, no fluorescence was detected in the silica substrate itself.

**CONCLUSION**

The data presented in this application note provides a measure of the fluorescence of the polyimide coating on synthetic fused silica capillary tubing as compared to the commonly used standard Rhodamine B. For additional information, contact Polymicro Technical Sales.

**REFERENCES**

(1) Data on UV transmission was obtained from Mr. Gary Nelson, Polymicro Technologies, LLC.