

**STATEMENT OF WORK**  
**Metal Deposition System for Coating Short Segment of Fiber Optic**

**PR: 4200556637**

**Background**

We desire a coating system capable of providing multi-layer metal coatings onto a section of fiber optic cable without removing the fiber from vacuum. The intent is to metalize a short section of the fiber optic cable for later solder sealing into a metal housing.

**Scope**

- Existing vacuum chamber with inside dimensions of 3 foot x 3 foot x 3 foot will be used to keep costs lower, unless system requires custom chamber.
- Existing vacuum chamber is turbo pumped with dry roughing pump backing turbo. Turbo speed and gating exist for adjusting pumping speed.
- Delivered system shall fit inside existing vacuum chamber or be supplied with its own vacuum chamber.
- Delivered system will provide connections from inside chamber to outside chamber through either a 2.75 or 4.5 Conflat flange (two of each size are present on existing chamber).
- Deposition system shall be able to coat a short section of fiber optic ranging in diameter from 125 microns up to 1.5 millimeters over a minimum length of 0.25 inches (no maximum length requirement, but subsequent sealing will only require 0.25 inches. Extra coating length offers little to no benefit.)

**Requirements**

- Deposition system shall be able to deposit at least two metals as delivered, but should be expandable in the future to deposit up to 4 metals. Primary metals to be coated onto fiber include Nickel, Titanium, Platinum, and Gold.
- Only one metal will be deposited at a time, so translation of the fiber can be used to reposition between coatings as long as vacuum can be maintained.
- System shall deposit uniform metal coatings around the circumference of the fiber. Even though a short section of fiber is coated, at times we will be coating a small section in the middle of a much longer fiber. So, minimizing coating rotation is desired to avoid having to rotate large loops of fiber at both ends.

**Deliverables or Delivery Schedule**

- Delivered system shall come with deposition sources for two metals and all associated power supplies, cooling lines, and other hardware to operate the deposition sources. One power supply can be shared between both deposition sources since only one metal will be deposited at a time.
- Nickel, Titanium, and Gold targets will be supplied with system to allow for deposition of Gold over Nickel or Gold over Titanium.
- Instruction manuals shall be included.

- Fixturing to hold deposition system inside existing vacuum chamber will be GSFC responsibility, but delivered system should provide necessary structure and support to hold and align deposition sources relative to each other and allow some means of external support.

**Government-Furnished Equipment and Government-Furnished Information**

- N/A

**Place of Performance**

- N/A

**Period of Performance**

- Vendor to specify lead time on quote