

## ***FRESHMAN DISCOVERY SEMINAR***

### ***JOIN TO LEARN ABOUT DIAMONDS!!!***

#### ***SEMINAR CONTENT***

### ***Diamond: Gemstone, Scientific and Industrial Material, and Indicator of Poverty and Prosperity***

Diamond, built by densely packed carbon atoms, is valued as a gemstone and as a unique industrial/technological material due to its extraordinary hardness, transparency, high thermal conductivity, and ability to be a semiconductor when doped with boron. Most natural diamonds are formed in the Earth's deep interior, which is called the mantle, where high pressure and high temperature stabilize carbon in the form of diamond crystals. Diamonds are delivered to the surface by volatile rich magmas rising up through pipe-like structures, or they are incorporated in rocks and minerals formed during collisions of continental plates. There are also solar diamonds, scattered in cosmic space, and impact diamonds formed due to meteorite bombardments of the Earth.

Due to diamond's chemical inertness and its stability over geologic time, it is a near-perfect container for fluid and solid inclusions that are trapped during diamond growth. The chemistry and structure of such inclusions are used to reconstruct the mineralogy in Earth's deep horizons and the conditions of diamond-forming media. All of this provides valuable information for understanding the movements and collisions of continental plates; mountain building; mantle enrichment with H<sub>2</sub>O and light elements, including <sup>40</sup>K, which strongly influence the Earth's thermal evolution; volcano eruptions; and earthquakes.

Diamond is one the most important materials used in high-technology and many industrial applications because of its unique physical properties. Yet, being so useful for human life and society, diamonds unfortunately are used to fuel and finance armed conflicts—such diamonds are known as “bloody diamonds” or “conflict diamonds.” The United Nations General Assembly has recognized that conflict diamonds are a crucial factor in prolonging brutal wars in parts of Africa. In Angola and Sierra Leone, conflict diamonds continue to fund the rebel groups that are acting in contravention of the international community's objectives of restoring peace in the two countries.

This Freshmen Discovery Seminar will discuss the origins of diamonds, their occurrences in the Earth, the history of their exploration and mining, their outstanding roles as gemstones and as a scientific and technological resource, and a specific “political indicator” of such things as war vs. peace and poverty vs. prosperity.

