Study of New Method for Adding Fire to Diamonds

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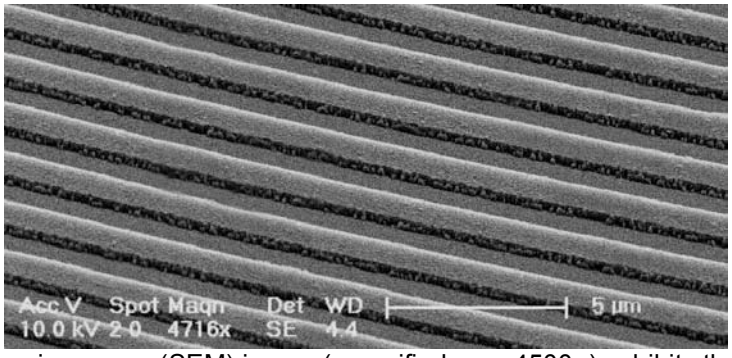
A new method of increasing the visual perception of fire in diamonds has been developed using nanotechnology techniques developed at the California Institute of Technology (Caltech). This new method, called Nanopolish® or Nanocut®, places unique optical structures on the surface of a diamond to increase the appearance of fire. As in traditional diamond cutting and polishing, only material on the surface is removed—nothing is added or altered within the diamond. The additional fire results from a diffraction grating pattern etched into portions of the surface. This diffraction grating separates light into its spectral components, causing incident white light to appear as flashes of colored light.

Details of the Nanopolish® process and visual observation studies of these diamonds have been submitted for possible publication in *Gems & Gemology*.

This 0.46 ct round brilliant diamond has small areas on the pavilion etched with diffraction gratings that increase its apparent fire. Photo by Robert Weldon



This scanning electron microscope (SEM) image (magnified over 4500×) exhibits the parallel etched lines of the diffraction grating etched on the diamond's surface.

A. Gilbertson. Study of new method for adding fire to diamonds. News from Research, October 27, 2009. http://www.gia.edu/researchresources/news-from-research