

A Multifaceted Man

By Andrew Borck '06

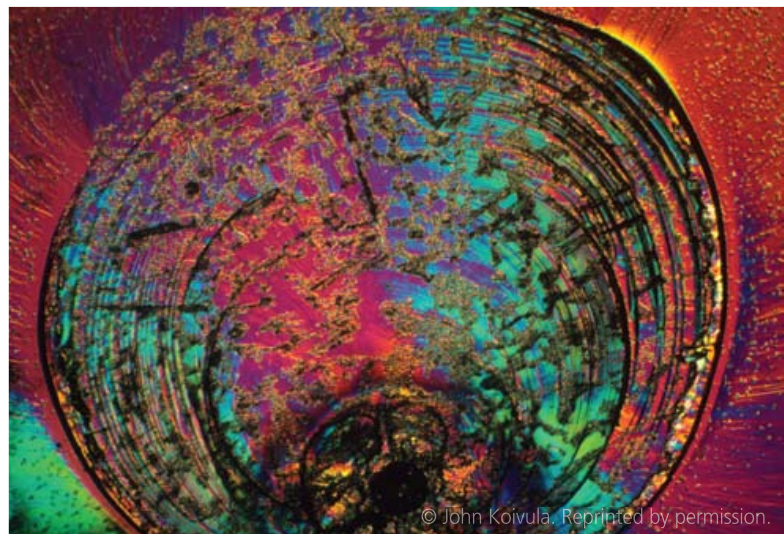
Most part-time jobs are necessary evils to pay the bills – done on the side, when you're not at another job or school. Unless you're like John Koivula. While working at the Gemological Institute of America (GIA), he ran into a scriptwriter and ended up becoming the scientific and technical advisor for the popular television series *MacGyver*, which follows the exploits of an extremely-resourceful secret agent.



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Not a bad part-time gig. But it's Koivula's full-time work that's made him world renowned.

Koivula is the chief gemologist at the GIA in Carlsbad, Calif., and is the world's leading authority on inclusions in gems and minerals. Inclusions are anything trapped inside the gem. They tell an experienced jeweler or gemologist if a stone has been treated, and they also give us a window into the earth's crust.

"If you want to know how the earth was formed, then study inclusions," says Koivula. "Mother Nature cooks in a very dirty kitchen. Inclusions are some of the crumbs she leaves behind that are swept up by gems."

Born and raised in Spokane, Koivula first found an interest in mineralogy and gemology at gold and copper properties owned by his mining engineer father. Koivula's family would go on "vacations" to maintain the sites where he would spend most of his time collecting minerals. In 1972, Koivula turned that fascination with rare earth into degrees in mineralogy-geology and inorganic chemistry from Eastern Washington State College. Thus began a long and illustrious career studying gemstones.

Besides its scientific applications, Koivula says the study of inclusions benefits the public – namely in fraud detection. "If treated gems and synthetics are sold as natural, that's fraud," says Koivula. "What I do is determine ways to microscopically detect methods of treatment and evidence of synthesis."

But Koivula isn't just studying gems; he's capturing their inner-workings as well with photographs taken through a microscope. By his own admission, Koivula's microphotograph system, the Nikon SMZ-10, is a dinosaur. But it's produced some incredible images and has helped Koivula win every major scientific photo competition out there. Koivula has also introduced several techniques (such as fiber optic illumination) and characteristics now commonly used in differentiating between treated and natural gems.

So how did this real-life scientist end up in the middle of the make-believe world of *MacGyver*? Koivula says it all happened when he met an experienced scriptwriter, Lee Zlotoff, at a preschool function for their daughters. Lee was given an assignment to write a series based around a "James Bond" character who used high-tech gadgets. It was Koivula's

idea to use everyday items instead, and Koivula was even the inspiration behind *MacGyver*'s Swiss Army knife (he always carried one, therefore so did *MacGyver*).

Even though Koivula had little interaction with actor Richard Dean Anderson (aka *MacGyver*) his idea made the show. "Without the 'MacGyverisms' there would have been nothing special and the show would not have lasted," says Koivula. He even wrote a script for the show that ended up being used at the beginning of the third season. Koivula says the producers and writers agreed to look at his script just to keep him happy, but let him know the chances of them using it were one in a thousand. They called him two days later to buy the script. Besides his stint in Hollywood writing, he has authored or coauthored more than 800 articles and notes on gemstone inclusions, microscopy and related topics for a wide variety of professional and trade publications. He's also a contributor to several books including the *American Geological Institute's Glossary of Geology*, *The MicroWorld of Diamonds* and is coauthor of the *Photoatlas of Inclusions in Gemstones, Volumes 1, 2 and 3*.

Writer, advisor, scientist and photographer, John Koivula has been called many things – including the "real" *MacGyver* – but in the show's seven-year run, it's safe to say the title character never took on as many roles as the man who helped create him. **E**

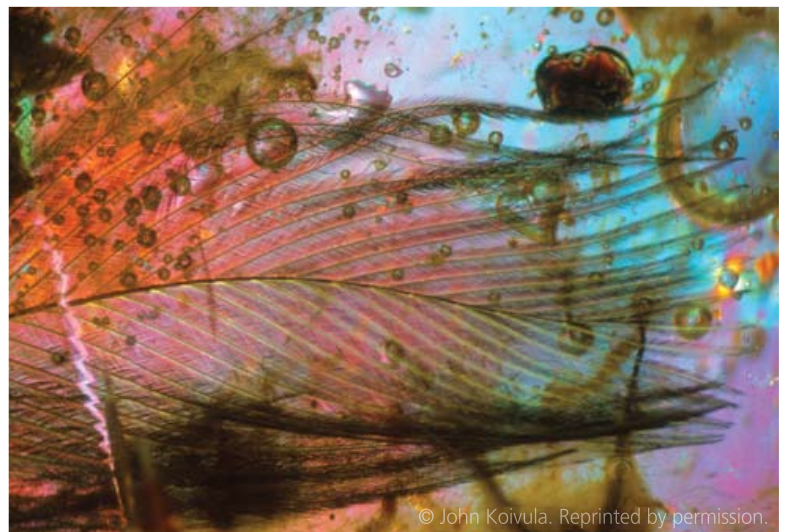
(See John Koivula's work at www.microworldofgems.com)

Pictured left to right: Diffraction-produced colors projected through the fine structure of a Brazilian iris agate; interference contrast highlights the detail of a decrepitation cleavage halo in peridot from Arizona; bright red dendrites of the iron oxide, hematite, have decorated a fracture in Brazilian quartz; Boyacá, Colombia is the source of this fossil resin containing a bird's flight feather.

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