

Opals set to shine with new grading technology

August 31 2009



The Gemmological Digital Analyzer (GDA) is the world's first automated device to grade opals using image analysis. Credit: Chris Taylor

CSIRO and a consortium of Australian Opal miners (Opal Producers Australia Limited) have unveiled the world's first automated device to grade opals using image analysis, at the 2009 National Council of Jewellery Valuers forum in Sydney.

CSIRO Mathematical and Information Sciences image analyst Leanne Bischof helped develop the Gemmological Digital Analyser (GDA).

Ms Bischof said that opals have a unique range of colour characteristics that makes them by far the most difficult gemstone to appraise.

"Qualities such as 'flash', the way an opal reflects light and colour as it is

rotated, can vary with human eyesight and lighting conditions," Ms Bischof said.

"A person's judgment of an opal's colours, the brightness of those colours and the area each of them covers is a really difficult task, even for a skilled opal assessor. You really need objective [image analysis](#) and automation to assist with that."

Incorporating the expert knowledge of over 60 opal industry professionals, CSIRO designed a GDA prototype with Australian company Applied Robotics.

CSIRO then developed the complex mathematical algorithms to drive the image analysis system behind the GDA.



A suction pump holds an opal in place on the stage inside the Gemmological Digital Analyzer (GDA). Credit: Chris Taylor

A small camera inside the GDA takes 871 images of the stone as it rotates on a stage which moves 360 degrees horizontally and tilts 90 degrees vertically.

High powered computers linked to the GDA analyse the images and quantify the opal's gemmological characteristics, providing a classification grade based on colour, clarity, carat, cut and character and a summary graph showing proportions of the opal's colours.

A database of information on the GDA graded opals will allow participating jewellers and industry organisations to accurately assign a dollar value to a particular grade of stone depending on the daily market price.

Director of Opal Producers Australia Limited and Lightning Ridge Opal miner Peter Sutton said the value of the Australian opal industry is estimated to be worth around \$50 million a year, according to the Australian Bureau of Statistics.

"We suspect this figure is grossly underestimated because valuations for a single stone can sometimes vary by thousands of dollars," Mr Sutton said.

The demand and trade for other Australian commodities like wheat, coal and gold have benefited from the introduction of an independent grading system, ensuring fair prices for producers and the supply of a consistent quality product to customers.

"We wanted to create an objective grading system that would improve the demand for and value of the Australian Opal industry, giving miners a fair price and consumer's confidence to trade with grade quality assurance," Mr Sutton said.

"This will be an independently-graded Australian opal product, which we will brand as Opallia."

Source: CSIRO Australia

Citation: Opals set to shine with new grading technology (2009, August 31) retrieved 6 May 2024 from <https://phys.org/news/2009-08-opals-grading-technology.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.