

## Ken Ham's Misconceptions about Opals

Kevin R. Henke, Ph.D.

*The following material may be freely copied and distributed as long as it's not altered, edited or sold.*

According to young-Earth creationist (YEC) Ken Ham (2003), geologists believe that opals require about 30 million years to form. Ham provides no references to support this blanket statement. He then proceeds to attack this claim by stating that he knows someone in Australia that can produce "high-quality" artificial opals in a matter of weeks. By making such an unreferenced statement and then attacking it, Ham thinks that he has refuted an old-Earth argument.

Opal is hydrated and essentially amorphous silicon dioxide (Klein and Hurlbut, 1999, p. 531-532). Typically, the material is divided into amorphous (opal-A) and disordered cristobalite and tridymite (opal-CT) varieties (Blatt et al., 1980, p. 581; Boggs, 1995, p. 254).

Contrary to Ham's assertions, opal synthesis is well known and not a rare secret kept by an Australian doing fruit jar chemistry. Pierre Gilson first synthesized high quality opals in 1974 (Klein and Hurlbut, 1999, p. 610, 531). Nevertheless, there are [subtle differences](#) between synthetic and natural opals. Furthermore, the rapid synthesis of opal with laboratory techniques does not guarantee that nature can replicate these conditions. That is, what can be rapidly accomplished in the laboratory is not necessarily quickly duplicated by nature. [Laboratory syntheses](#) of gemstones often use shortcuts that involve artificial compounds and conditions that do not occur in nature. On the other hand, because opal is poorly crystalline, there is no reason why it might not form relatively quickly under unusual conditions, such as the weathering of volcanic glass in extremely alkaline waters. So, millions of years may not always be required for nature to form an opal.

While making vague comparisons between artificial and natural opals, Ham fails to realize that once opal forms, it is unstable over geologic time (Boggs, 1995, p. 163, 254). Experimental studies indicate that disordered cristobalite ("CT") opal will alter to microcrystalline quartz

(chert) in about 180 million years at 20°C or in about 4.3 million years at 50°C. Not surprisingly, the oldest known opal (A or CT) is Lower Cretaceous or about 125 million years old (Blatt et al., 1980, p. 581). Now, if YECs were correct about opals forming from a "recent Flood" or "creation," why aren't they abundant in early Mesozoic, Paleozoic and Precambrian rocks?

## REFERENCES

Blatt, H.; G. Middleton and R. Murray, 1980, *Origin of Sedimentary Rocks*, 2nd edition, Prentice-Hall, Inc. Englewood Cliffs, NJ 07632.

Boggs, S., 1995, *Principles of Sedimentology and Stratigraphy*, 2nd ed., Prentice Hall, Upper Saddle River, NJ.

Ham, K., 2003, "Opals - Produced in Months?" *Answers Update*, v. 10, n. 11, p. 16.

Klein, C. and C.S. Hurlbut, Jr., 1999, *Manual of Mineralogy*, 21st ed., John Wiley & Sons, Inc., New York.