

SIMULANTS

Quartzite and Calcite Bangles, Resembling Jadeite

Recently submitted by an appraiser for identification were five bangle bracelets that were all represented as jade when sold to their client. Among them were obvious examples of agate and typical

B-jade (bleached and polymer impregnated), but also some unexpected imitations.

One bangle appeared near-colourless but was actually very pale yellowish green (seen

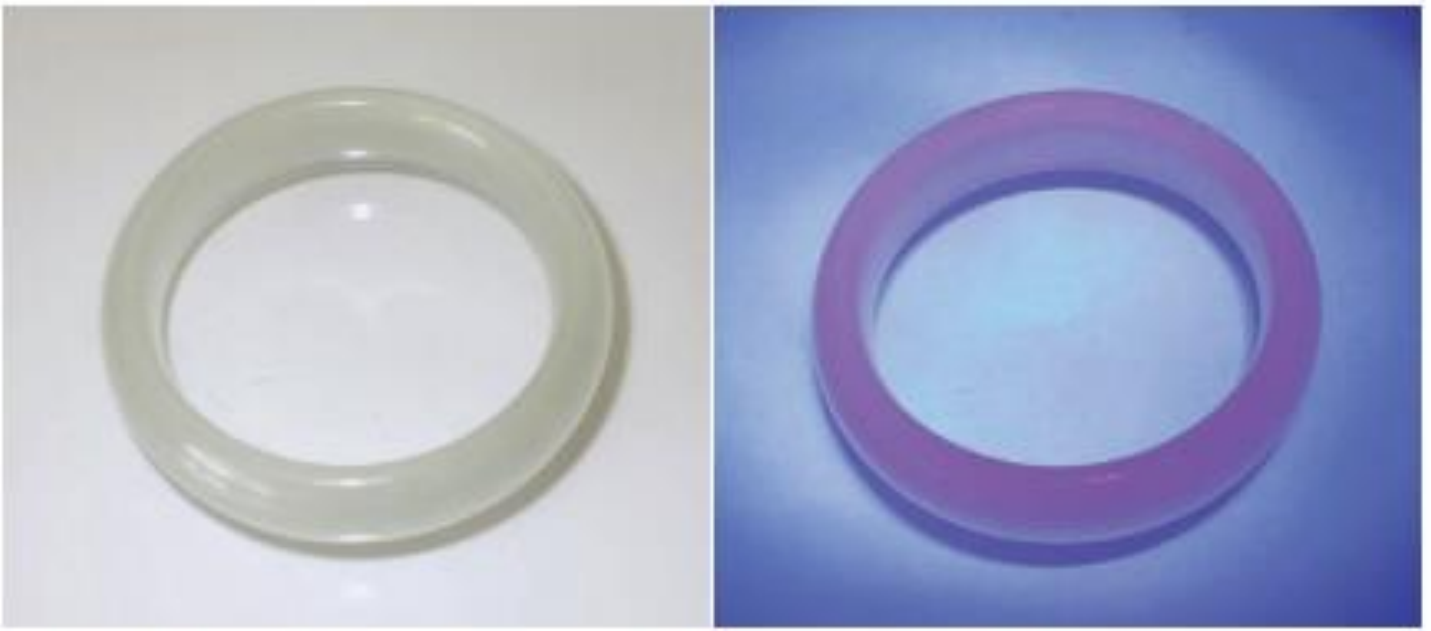


Figure 26: This 16.5-mm-diameter bangle resembling 'ice jade' proved to consist of calcite (left). It displays pink fluorescence to long-wave UV radiation (right). Photos by B. Williams.

only when placed on a white background). It exhibited the watery translucency typical of finer 'ice jade' (Figure 26, left), but Raman analysis with a GemmoRaman-532SG instrument identified it as calcite. Weighing 63.79 g, it was 16.5 mm in diameter and had an average thickness of 9.1 mm—which was somewhat thicker than a typical stone bangle. Close examination with a 10× loupe revealed an even pattern of colourless parallel banding throughout the piece, which created a weak, billowy cat's-eye effect along the entire circumference of the bangle. Viewed with the microscope, the banding was resolved as lamellar twinning together with numerous microscopic incipient cleavage cracks. Due to the twinning, the polariscope showed

no 'blink' (i.e. the bangle remained light when it was rotated between crossed polarizers). No polymers or dyes were detected, either by microscopic observation or by FTIR spectroscopy with a PerkinElmer Spectrum100 unit. EDXRF chemical analysis with an Amptek X123-SDD spectrometer revealed a relatively high Mn content, and the bangle showed a uniform moderate pink fluorescence to long-wave UV radiation (Figure 26, right).

Another bangle appeared to be an imitation of 'moss-on-snow' jadeite (Figure 27, left), a variety that exhibits small areas of vivid green coloration in a white base. The bangle weighed 66.27 g and was 16.9 mm in diameter with an average thickness of 8.6 mm. It was highly trans-

Figure 27: Although appearing like 'moss-on-snow' jadeite, this 16.9-mm-diameter bangle consists of dyed quartzite (left). The green areas of the bangle exhibit strong green fluorescence to long-wave UV radiation (right). Photos by B. Williams.



lucent and mostly milky white, with three areas that were mottled in deep bluish green. Microscopic observation revealed the typical translucent graininess of quartzite, and the coloured areas showed green dye concentrations along grain boundaries. Raman analysis identified the bangle as quartz, confirming that it was quartzite. FTIR spectroscopy revealed the presence of

a polymer in the coloured areas, which is the presumed method of delivering the dye. The green areas fluoresced a strong green under long-wave UV radiation (Figure 27, right).

While B-jade continues to be prevalent in the market, gemmologists should also be wary of other convincing jadeite imitations such as these.

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