

## **Fission Track Dating of Obsidian Source Samples from the Willaumez Peninsula, Papua New Guinea and Eastern Australia**

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**ABSTRACT.** Obsidian samples from several outcrops in Papua New Guinea and eastern Australia have been dated by the fission track method for the first time. The Papua New Guinea samples yielded young ages ( $\approx 25$  Ka), whereas dates of 85.5 Ma to 92.3 Ma were obtained for the Australian samples after using the plateau age and track size methods to correct for track fading. The archaeological implications of the fission track dates are discussed.

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During the last two decades Fission track dating of obsidian has assisted provenance studies of prehistoric artifacts and the chronological study of related volcanic activity. For example, intense investigations have been carried out in the Mediterranean and nearby regions (Bigazzi *et al.*, 1982, 1990, 1993). This approach is applied here to Papua New Guinean and Australian obsidians to supplement archaeological studies of raw material sources and

prehistoric trading patterns using trace element analysis (Bird *et al.*, 1987; David *et al.*, 1992; Torrence *et al.*, 1992, 1996; Summerhayes *et al.*, 1993, 1998). This paper aims to contribute to a more complete characterisation of sources and an improved understanding of their geological history by providing the first age determinations for some Papua New Guinean and Australian obsidians.