Scanning electron microscopy (SEM) has been used to visualize detail in tooth surface morphology for studies of snake systematics (e.g., Jackson and Fritts 1995, 1996; Rasmussen 1975) and functional morphology (e.g., Kochva and Melier 1986; Mebs et al. 1994; Savitzky 1981). Although SEM allows the morphology of snake teeth to be examined at high magnifications, it has the disadvantage of being destructive; maxillae or individual teeth must be removed from the specimen, mounted on stubs, and sputter-coated with gold. The destructive nature of this technique limits its usefulness for the study of type or rare material and for studies involving large series of specimens.

The following technique was developed by Myers et al. (1995) for the study of mammalian taste papillae, but may be applied equally well to the study of snake teeth. Here, I will describe its use to make a high resolution cast of the grooved posterior fang of the brown tree snake (Boiga irregularis).

The mouth of a fluid-preserved specimen (B. irregulararis, THF 9709) was blotted dry, and the left posterior fangs were exposed. A droplet of Reprosil hydrophilic vinyl polysiloxane impression material (light body) (Dentsply International Inc., Milford, Delaware 19963-0359, USA) was applied to the corner of the mouth (so as to completely cover the fangs) and allowed to dry (Replosil is mixed with a catalyst immediately prior to application, and takes approx. 7 min to harden to a rubbery consistency). The solidified Replosil impression was then peeled off the fangs and stored at room temperature for 24 h to allow for degassing. A cast of the fangs was made by filling the impression with Spurr’s low viscosity embedding medium (firm mixture) (Bozzola and Russell 1992), using a 23G½ hypodermic needle and a 1cc syringe. After the cast had been allowed to cure for 24 h at 70°C, the Replosil impression was peeled off.

Fig. 1. SEM image of (A), the grooved posterior fang of *Boiga irregularis*, and (B) a high resolution cast of the same specimen.

For the purpose of comparison between cast and original fang, the left maxilla was later dissected out of the specimen. Both the cast and the original fang from which it was made were mounted on a stub, sputter-coated with gold, and examined using a JEOL 6400 scanning electron microscope at an acceleration voltage of 15 kV. The resulting SEM images of the original fang (Fig 1A) and of the high resolution cast of the same fang (Fig 1B) are shown below. This technique has many potential applications beyond the study of snake teeth, and could be used for the non-destructive study of the surface morphology of any hard or soft tissue (e.g., scales, hemipenes, etc.).

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Literature Cited


