

**Applicant (name and affiliation): this is usually the museum curator:**

David Morris, McGregor Museum

**Applied for (principal researcher):**

Michael Chazan, University of Toronto, University of the Witwatersrand

**Participants with affiliations, email addresses, phone numbers (& their role):**

1) Melissa Miller

Role: Graduate Student Researcher

The material will be couriered to the Department of Anthropology, University of Tulsa in October 2018 by Michael Chazan and brought back by Michael Chazan.

Melissa Miller will be involved with the analysis of the objects.

**Institution incl. address that currently hosts the object:**

McGregor Museum, Kimberley

**Facility incl. address at which the experiment will be done:**

Department of Anthropology, University of Tulsa, Harwell Hall, 800 South Tucker Drive, Tulsa, Oklahoma 74104, USA

**Table of objects or upload file:**

See uploaded file

**Site including age at which object was found:**

Bestwood 1, Fauresmith

**Time frame:**

Transport to \_\_University of Tulsa\_\_ (facility): \_\_October 2018\_\_ (date)

Return date: \_\_August 2019\_\_ (date)

**Aim/rationale:**

Request to export 43 unretouched flakes from the site of Bestwood 1 for microscopic analysis at the University of Tulsa, Tulsa, Oklahoma (United States) as a component of Melissa Miller's PhD research. The goal of this export is twofold: to document artifact condition and to identify microwear traces that may be attributable to use of the artifacts by hominids. This sample represents less than 3% of the excavated sample from the Bestwood 1 site, Northern Cape Province.

**Methodology (short):**

Export is required for analysis using the University of Tulsa's Sensofar S-Neox microscope. This confocal microscope creates and analyzes scans of an item's surface, allowing documentation and description of surface texture that can be quantified and compared. For lithics, it makes possible the detailed description of a material at different stages of wear and of polish texture, pitting depth, striations, and other microwear characteristics. I will compare this data to scans already taken of pieces experimentally damaged through use and replication of post-depositional processes and combined with other microscopy methods to infer the cause of any edge damage present on the Bestwood artifacts. This microscope is not portable and while several researchers have scanned molds of items they cannot access for direct scanning, the accuracy of such molding methods is still under intense debate. Exporting and directly scanning artifacts is the best option for accurate data documentation. Ms. Miller chose these pieces for export after examination at multiple magnifications with a portable dino-lite digital microscope (AM3111 0.3 MP). Under 230x magnification some pieces have edge wear characteristics very different than their interiors, including rounding, polish, abrasion, and regular microremovals, suggesting at the very least some type of process affecting edges but not the entire artifact.

**Confirmation/permit by museum:** Attached

**Damage/destructive analysis?** No

**Statement why this study cannot be done in South Africa:** Tribology microscope not available for archaeological analysis.