

## Identifying an Unknown Francesca Woodman: An Investigation into Diazotypes

### SUMMARY

In 1996 the Metropolitan Museum of Art acquired a photograph by Francesca Woodman as a gift from a friend of the artist. It was produced in 1980 and is part of a larger body of work Woodman developed called "The Temple Project." This image depicts an over life-size standing female nude, the artist herself, in tones of brown. Identification of the image process was undertaken on behalf of the Department of Photographs as a student research paper, which serves as the basis for this paper.

Several factors lead to the identification of the photographic process as a diazotype. Scientific analysis was performed at the Winterthur Analytical Laboratory by Kate Duffy and included x-ray fluorescence spectroscopy, scanning electron microscopy with energy dispersive spectroscopy, and Fourier transform infrared spectroscopy. In addition, Debora Mayer performed fiber analysis to provide insights into paper base manufacturing techniques. Visual examination confirmed descriptions of object and deterioration characteristics found in the literature. Finally, interviews conducted with the artist's parents Betty and George Woodman revealed further details of Woodman's working technique: a film positive (35 mm or lantern slide) was projected onto a light sensitive diazo paper and developed in a commercial processing unit.

Azo dyes are one class of synthetic colorants developed in the nineteenth century that can produce many different colors by manipulating the fundamental coupling components. In the 1880s and 90s patents for the application of diazo dyes numbered in the thousands. It is the diazotype dye as image material on white background executed without wet chemicals ("dry") that proved most successful for

the reprographic industry's need for quick efficient copying of technical drawings.

A diazonium compound when combined with an appropriate coupler under alkaline conditions yields a colored diazo dye molecule. Photodecomposition of diazonium compounds is the basis for the photographic process; this compound is altered or deactivated by UV radiation so that in alkaline conditions it can no longer combine with the coupler to produce a dye molecule. Highlights are created by light-induced disabling of image-forming materials; thus a positive original yields a positive copy.

Usually condition problems found in diazotypes derive in part from inherent vice and their sensitivity to environment. Deterioration is manifested in three ways: background yellowing and darkening, discoloration of dye, and increased brittleness of base layer. To explore options for treatment, storage, and exhibition, rudimentary empirical tests were carried out on samples from a diazotype made around the same time as the Woodman print. The results point out noteworthy changes—image color variations were noted during immersion testing, and exposure to light significantly faded the organic dye. Based on these preliminary tests, recommendations for storage and exhibition primarily mimic current environmental standards used for color photographic material. Further, to protect neighboring photographic materials from potential chemical contamination, additional precautions are recommended.

Additional discussion pertaining to the treatment, handling, and exhibition of a related large-scale diazotype is presented in a companion summary, "Revealing Francesca Woodman's Temple Project" by Nora W. Kennedy (see p. 13).

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