

CHARACTERIZATION OF FOUR POLYMER TRACING PAPERS

SUNY BUFFALO STATE - CAROLYN BURNS

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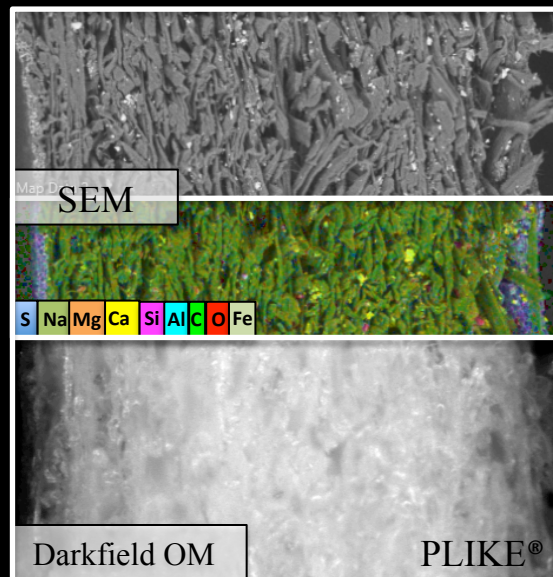
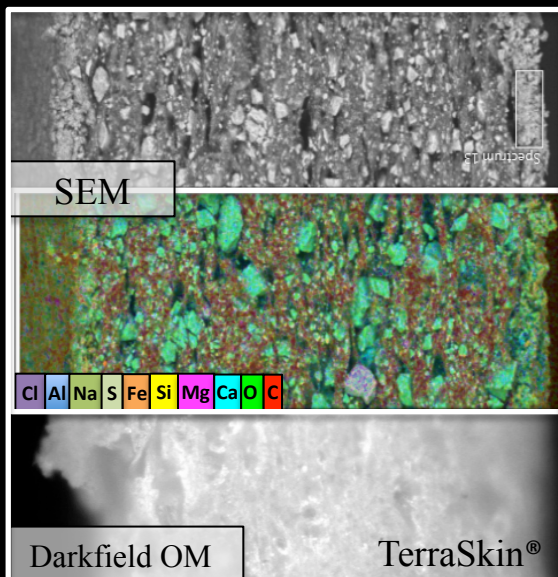
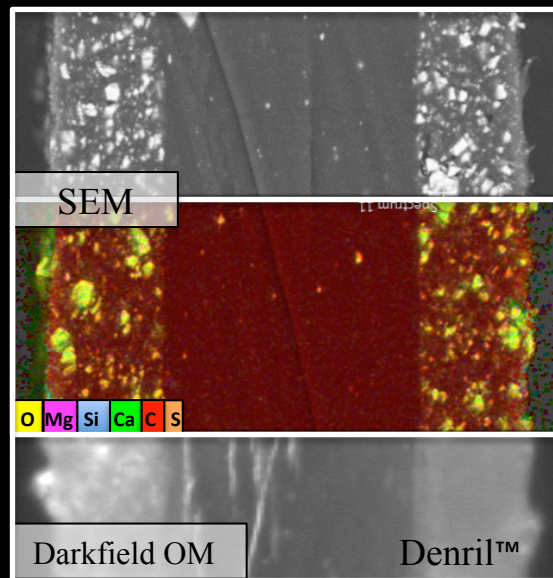
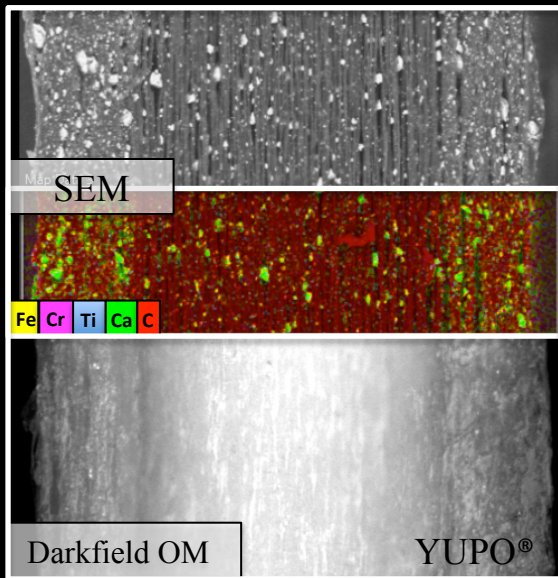


#dotsonYUPO

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Julie Mehretu, *Rogue Ascension*, 2002, Print on Somerset Satin white paper and Denril vellum, 32" × 24½", New Limited Editions Museum



ANALYTICAL TECHNIQUES:

Multimodality imaging*

OM

XRF

ATR-FTIR

SEM-EDS*

py/GC-MS



UVA-INDUCED VISIBLE FLUORESCENCE



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all other images my own with the help of Dr. Aaron Shugar

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Characterization of Four Polymer Tracing Papers

SLIDE 1:

Synthetic papers, including YUPO® (Yupo Corporation), Denril™ (Borden & Riley), TerraSkin® (Design and Source), and PLIKE® (Gruppo Cordenons), are making their way into the art world. They can be seen on exhibit and in the permanent collections of museums, such as the Museum of Modern Art and the British Museum. These materials are advertised as being recyclable, sustainable (“tree-free”), and acid-free, while retaining paper-like qualities that are compatible with artists’ media such as watercolor, acrylic, oil, pen and ink, and digital printing inks. However, these alternative “papers” are not paper in the traditional sense, but rather blends of polymers with coatings, offering an analogous surface receptive to diverse applications. These polymeric papers, except for PLIKE (*Figure 1*), are generally white to off-white in color and translucent. PLIKE is opaque and manufactured in a wide variety of colors, though only white was included in this study.

SLIDE 2:

Five analytical techniques were used to characterize the surfaces and cores, and to identify the physical structures of the four papers. Multimodality imaging and SEM-EDS proved to be the most valuable techniques, revealing information concerning surface topography and chemical composition of the surface coatings and core particles. YUPO, Denril, and TerraSkin are polyethylene- and/or polypropylene-based, while PLIKE is a coated, cellulose-based substrate. Several general observations can be made about all of the papers: each exhibit more-or-less a three-layer composition, and their topographies are the same on recto and verso, meaning that there is no preferential side when using the papers. Most coatings showed high concentrations of calcium, while inner layers incorporated fewer particles than outer layers. TerraSkin proves an exception, however,

with high concentrations of particulate material throughout the cross-section, and a refined outer skin of finer particles.

SLIDE 3:

Perhaps the most telling finding for conservators was captured in multimodality imaging. UVA-induced visible fluorescence showed evidence of oil uptake from handling, and fading from light exposure on the three papers with synthetic substrates. These observations suggest that polymeric papers are highly susceptible to degradation. Consequently, they should always be handled with gloves, and storage and display conditions should maintain stable climates, while minimizing or eliminating exposure to harmful UV radiation.

This was a pilot study and further research should investigate the degradation and aging of these materials, especially YUPO, Denril, and TerraSkin, due to their polymer cores. It is expected that light, heat, and possibly moisture will be damaging to the polymeric structures, which could result in catalyzed degradation or loss of works of art. Cleaning and solubility of the surface coating should also be evaluated, as these may degrade with common surface cleaning materials and conservation solvents. Furthermore, potential incompatibility between these engineered papers and artistic media should be investigated, as it is unclear if or how the diverse composition of media could influence degradation within the surface and/or binder layer. Finally, this study has only characterized white PLIKE, however, other colors warrant further study to identify pigments and colorants, and any resulting differences in composition or characteristics.