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*A Pigment Particle & Fiber Atlas for Paper Conservators*

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## *Preface*

This is the resulting research project produced by Claire McBride during her Getty Trust postgraduate fellowship in paper conservation at Cornell University (Oct 2001-02). The following document is a first draft, as yet uncompleted and largely unedited in its entirety. The intention of the project was to begin compiling an accessible, practical atlas of pigments and paper fibers for the use of conservators in private practice and small studios. This year a solid ground of information was gathered from scientific and artistic sources on the most common paper fibers and pigments. The atlas design, information gathered, the microscopy and photography were researched and produced solely by Claire McBride as part of her learning and practical experience gained on this internship. However the idea of the atlas was the proposal of Tatyana Petukhova, Senior Paper Conservator at Cornell and this work could not have been produced without her constant encouragement and guidance. Much time and work was spent on the images and the image database of fibers and pigments gathered and stored at the Graphics Conservation Lab. We hope that this work will continue and the range of pigments and fibers covered will grow. Future students may make their own additions in their own specific areas of research until the more obscure pigments and fibers are included. It was with this in mind that a page template was provided at the end of each section. The atlas compiles basic reference facts on each pigment and fiber gathered from the arts and science libraries at Cornell as well as from articles and the world-wide-web. The bibliography points to further reading in specific areas but hopefully this document will reduce the excessive time spent by those of us in the conservation profession who find themselves searching for scientific and art history information from many different sources, as the latter two fields are usually kept very much apart. This document has been placed on the Cornell website, accessible through the Graphics Conservation page in its present state at the end of Claire McBride's appointment at Cornell. Currently we are looking at publishing this atlas in hardback hopefully at the beginning of next year and as the work is refined and content checked for correctness, the copy available here will also be updated.

## *Introduction*

This project aimed to produce a practical reference atlas for conservators in order to assist them in the identification of various pigments and paper fibers found in works of art on paper. The process of the atlas project resulted in the collection of a pigment and fiber sample library for the research use and interest of the Preservation & Conservation Department of Cornell University; for its staff, those of the Herbert F. Johnson Art Museum and Cornell students as a whole.

The atlas has four distinct sections; both Western and Eastern with each sub-splitting into pigments and paper fibers. Each section is colour coded with a border as illustrated on the following page and each section is in alphabetical order (rather than page numbered) so later additions can be easily added. The focus of the project is on the most common pigments and fibers with emphasis on Western pigments with which I am most familiar. The main function of this atlas is to become a practical reference guide, and a dictionary assisting conservators in small laboratory's in both private practice and small institutions. Including both art historical and scientific information such as: chemical formula, manufacture, usage, dates of use, surface morphology, aging characteristics and methods of technical/ instrumental analysis.

Each sample is illustrated with a basic reflected light microscopic photograph as well as one taken through a polarizing light microscope at crossed-polars. Each with x500 magnification and with different samples aiming to encourage the reader to recognize the similarities in samples of the same type, and not to rely on exact matching to reference photographs such as those that I have recorded in the atlas and those from other sources. I aimed to record samples typical of the pigment or fiber and only slight alterations were made to the micrographs such as brightness and contrast through adobe photoshop in order to make the sample clearer in definition. Much time was spent on photography so a good image database could be compiled in the Graphics Studio for future reference. All pigments were purchased new from Kremer Pigmente so one should bear in mind, when studying and comparing samples the effects of light ageing for instance, and mediums which may inhibit clear analysis of samples from actual artworks. Be aware also that all samples are not alike! Mineral based pigments may vary greatly in size and uniformity largely as a result of the extent with which they were ground and washed during preparation. Fibers can vary from variety to plant to

The atlas also aimed to bridge the gap between practical studio conservation analysis and a more scientific approach aiding the identification process of a pigment or paper, the provenance of the object, its date and conservation treatment decisions. Although brief in data the bibliography and appendices directs users to particular reading and research documents reducing time on publication searches.

Although an ambitious project, it was intended that the work done this year would form a sound basis of information covering the most common pigments and fibers. We hope that future students will continue to add information and refine the data. With this in mind a template page has been added at the end of each section for students and conservators who wish to print out the project, make additions and work from it.

**Key to Sections – Fibers split into sections and denoted by coloured borders.**

**Denotes a Pigment  
Originating from  
West**

Alphabetical Order

**Denotes a Fiber  
Originating from  
the West.**

Alphabetical Order

**Denotes a Pigment  
Originating in  
East**

Alphabetical Order

**Denotes a Fiber  
Originating in  
the East**

Alphabetical Order

**Denotes a Pigment  
Originating from  
Both the East & West**

Alphabetical Order

**Denotes a Fiber  
Originating from  
Both the East & West**

Alphabetical Order