Biodeterioration of Cultural Heritage

Dynamic Interfaces Between Fungi, Fungal Pigments and Paper

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Summary

Fungi-induced stains on paper are one of the most challenging forms of biodeterioration to study and to prevent; this is because they involve living organisms, and the ways in which fungi respond to changes in the environment and modifications of paper are unpredictable. Yet, there is a great desire among those who encounter fungi on documents, manuscripts, or artwork to remove fungi and clean the paper. This ground-breaking book attempts to answer this question, among others, by exploring the complex interfacial forces between paper, fungi, and their pigmented secretions which result in bio-stains on paper. Black fungi, collectively referred to as Dematiaceous fungi, were used in this study as a subset of pigment-producing fungi species. The focus is on two, under-studied aspects of the fungi infestation of paper, an interface of fungal pigments and paper, and the impact of light on the production of fungi bio-stains. The results of analytical testing included in this book elucidate the synergistic interactions between the environment, biological clocks of the microorganisms, and secretion of fungal pigments to paper. In this book, the paper surface is characterized in detail and in correlation with chemical and physical alterations caused by fungal pigmentation. The proposed book is the first to explore the complexity of fungal–paper interactions with the intention to assist professionals working with cultural materials, especially paper-based materials, to make informed decisions when dealing with the fungi infestation of paper.

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