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Material aging in the environment

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The Institute of Physics and Materials Science is specialized in characterization of biological and bio-based material including a variety of techniques and fields of application. One of them is the determination of age.
Brief description/core competencies
Chemical changes over time can be used to describe various processes. Provided these changes are slow and uniform, it is possible to use the taphonomic behavior as a chronometric clock to predict age.
Wood: Dating models have been created for spruce, fir, larch and oak. Different storage conditions, different species/genera and the extension of the existing models in time and spatial validity are the focus of current research.
Charcoal: delineation of the factors of pyrolysis conditions and aging processes is critical to long-term stability. The study of traditional charcoal processes provides the means to separate the two effects. Degree of pyrolysis, as well as elemental composition, can be predicted from infrared spectra. Aging processes lead to specific chemical changes over time. Therefore, different epochs can be separated from each other. Further investigations aim at the improved description of pyrolysis processes, as well as the development of dating models.
Straw: dating of straw as an aggregate in clay bricks, clay plasters and similar construction methods; investigation of various influencing factors, such as storage and construction method.
Hair, bone, tooth: aging studies.

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