Development of an In-Situ Moisture Content Sensor

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The objective of this project is to develop an In-Situ Recording Moisture Content Sensor. Throughout the year the moisture content of the various building materials varies significantly depending on the geographical location of the home, the temperature and relative humidity of the conditioned space, and the selected construction materials. The formation of mold and other fungi depends on the moisture content of materials and the elapsed time during which conditions suitable to fungi formation have existed. Currently available instrumentation does not provide this information.

This project will involve an extensive review of the engineering literature on instrumentation for measuring moisture to identify measurement methods that are most promising. A prototype instrument will be constructed and evaluated for typical building construction materials. The most appropriate location for the moisture content sensor within a wall will be investigated using NISTís MOIST program. Data recording devices that preserve the moisture content history of a material will also be examined. This will be especially useful to building practitioners who typically spend less than a day investigating moisture problems within a home because, if successful, the device would offer a measurement of moisture content as a function of time of year.