

Preliminary magnetic biomonitoring results of the spatial distribution of atmospheric particulate matter at Toyama city, Toyama, Japan

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Magnetic biomonitoring techniques have been shown to be rapid, cost-effective and useful methods for investigating spatial distribution of air pollution. Here environmental magnetic results are reported for the materials deposited on the Japanese flowering cherries (*Prunus* subgenus *Cerasus*) at Toyama city, Toyama, Japan. About three leaves were collected from each flowering cherry at the height of 1.5 to 2.0 m from the ground, and then the collected leaves were put into plastic cubes for magnetic analyses. Also the materials deposited on the top of the leaves were wiped off and analyzed by low temperature experiments. Detailed rock magnetic analyses indicate that the main magnetic minerals are single-domain partially oxidized magnetite, and the magnetic mineralogy on leaves' surface is likely consistent throughout the study area. Higher saturation isothermal remanent magnetization (SIRM) intensity is observed at the urban area than the rural area. Also, the observed SIRM intensity at each site increase over time even after heavy rain. These results indicate that magnetic biomonitoring using the leaves of the Japanese flowering cherry can be a rapid and cost-effective method for studying the spatial distribution of atmospheric particulate matter derived from local industrial activities, and therefore it should be considered for application elsewhere in the country.

Keywords: Environmental magnetism, Japanese flowering cherry, Atmospheric particulate matter