

Preliminary magnetic biomonitoring results of the spatial distribution of atmospheric particulate matter in Muroran, 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. However, a few studies have been reported such magnetic monitoring in Japan due to: a) lots of volcanos that supply great amount of magnetically-enhanced fly ashes; and, b) the dense population that cause huge amounts of magnetic noise. Here we report environmental magnetic results for the materials deposited on *Sasa kurilensis*, or dwarf bamboo, around the city center of Muroran, Japan. The dust on the leaves are wiped and analyzed their rock magnetic properties. Detailed rock magnetic and low temperature analyses show clearly that the main magnetic minerals in the dust are single to pseudosingle domain magnetite and/or partially oxidized magnetite, and the magnetic mineralogy on leaves' surface is consistent throughout the study area. Much higher saturation isothermal remanent magnetization intensity is observed at eastside of the heavy and chemical industrial area in the city and the local wind had generally come from west to east direction. These results indicate that magnetic biomonitoring using the leaves of dwarf bamboo can be a rapid, non-destructive and cost-effective method for studying the spatial distribution of atmospheric particulate matter derived from local industrial activities even in Japan.

Keywords: Environmental magnetism, Dwarf bamboo, Atmospheric particulate matter, Japan