

## 摘要

本研究主要在探討陽明山地區雨水中微量金屬 Mn、Pb、Ni 濃度季節變化及來源的探討，雨水樣品取自於中國文化大學華岡測站，採樣時間自 2002 年 5 月至 2003 年 9 月止，總共取得 120 個雨水樣品(雨量 $\geq 0.1\text{mm/day}$ )，並以石墨式原子吸收光譜儀來測定 Mn、Pb、Ni 等微量金屬濃度，分析各元素在不同季節的變化情況，再以富集值和元素總量來計算各元素的可能來源。

2002 年 5 月至 2003 年 9 月所測得的雨水 pH 值介於 3.8~7.6 之間，平均值為 5.26，大部分都介於 pH 4 到 pH 6 之間，我們可以明顯的發現雨水 pH 值受到季節的影響有週期性的變化。在 17 個月的雨水樣品大多都集中在 20 毫升左右，雨量的多寡與微量金屬的濃度成反比，雨量越多則測定出來的微量金屬濃度就越低。由富集值可發現 Pb 和 Ni 都是以污染源為主，Mn 則是污染源與地殼源各半。Ni 元素在春、冬之際，受到東北季風挾帶中國大陸東南沿岸工業污染的影響，而濃度上升；在沙塵暴發生的期間，各元素也因沙塵暴的影響，使得濃度較高。從總量表可以看出，三元素受到沙塵暴的影響很大，在沙塵暴發生的期間濃度就會明顯上升，而 Ni 元素秋季濃度上升，則是受到東北季風的影響。

## Abstract

The period from May, 2002 to September, 2003, total one hundred and twenty rain samples (rainfall > 0.1mm/day) was collected during rainy days at Weather Observation Station in Chinese Culture University. On the study, trace metals Mn, Pb, Ni were determined by graphite furnace absorption spectrophotometry (GFAAS). The research purposes are (1) to discuss change of trace metal concentration in rainwater with season, (2) applying model of enrichment factor to depict sources of trace metal in rain water.

From the results, the pH of rain water ranges from 3.8 to 7.6; the average is 5.26. The most data is between 4 and 6. The pH of rain water varied with periodical season change. The rainfall affected trace metal concentration of rain water. High rainfall diluted the trace metal concentration.

The trace metal Ni concentration of rain water was affected by the industrial pollution from east coast of mainland China carried by the northeast monsoon in the Spring and Winter season. The dust storms occurred in the Spring either increase trace metal concentration of rain water. Lead and nickel in rain water are from pollution; but Mn is part from crust material and part from pollution.