



AN AIR QUALITY MONITORING SYSTEM FOR URBAN AREAS BASED ON THE TECHNOLOGY OF WIRELESS SENSOR NETWORKS

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Abstract- Air pollution is one of environmental issues that cannot be ignored. The heavy transportation and urbanization result in the air pollutants concentrated in certain areas. Inhaling pollutants for a long time causes damages in human health. Traditional air quality monitoring methods, such as building air quality monitoring stations, are typically expensive. In addition, monitoring stations are generally less densely deployed and provide low resolution sensing data. This paper proposes an urban

air quality monitoring system based on the technology of wireless sensor networks (WSNs). It also integrates with the global system for mobile communications (GSM). The system consists of sensor nodes, a gateway, and a control center managed by the LabVIEW program through which sensing data can be stored in a database. This system is deployed to the main roads in the Taipei city to monitor the carbon monoxide (CO) concentration caused by vehicle emissions. The experimental results show that the proposed system is suitable for micro-scale air quality monitoring in real-time through the WSN technology.

Index terms: air quality monitoring; wireless sensor networks; real-time monitoring.