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DEVELOPMENT OF TRACE TOXIC GAS ANALYZER BASED ON WET SAMPLING/COLORIMETRIC METHOD

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The development of efficient analytical instruments for monitoring toxic gases emitted from industrial sites in order to protect environment and human health has become a growing need. In this research, a low cost automatic instrument is developed for quantifying trace amounts of toxic gases accurately and continuously. The principle is based on aqueous scrubbing of the target gases by a coil sampler coupled with a gas-liquid separator, followed by derivatization of the analytes to form highly light-absorbing chromophores in an on-line reactor, derivatives then are quantified by a colorimetric detector. With specific derivatization selection, airborne water soluble toxic gases hydrogen fluoride, ammonia, hydrogen sulfite and formaldehyde are determined with detection limit of sub-ppb level. The response of the analyzer is linear from 0 to 10 ppm.