

Publication**Separation of volatile and non-volatile aerosol fractions by thermodesorption: instrumental development and applications****JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)****ID** 4519806**Author(s)** Burtcher, H.; Baltensperger, U.; Bukowiecki, N.; Cohn, P.; Hüglin, C.; Mohr, M.; Matter, U.; Nyeki, S.; Schmatloch, V.; Streit, N.; Weingartner, E.**Author(s) at UniBasel** [Bukowiecki, Nicolas](#) ;**Year** 2001**Title** Separation of volatile and non-volatile aerosol fractions by thermodesorption: instrumental development and applications**Journal** Journal of Aerosol Science**Volume** 32**Number** 4**Pages / Article-Number** 427-442**Mesh terms** Science & TechnologyTechnologyLife Sciences & BiomedicinePhysical SciencesEngineering, ChemicalEngineering, MechanicalEnvironmental SciencesMeteorology & Atmospheric SciencesEngineeringEnvironmental Sciences & EcologyMeteorology & Atmospheric Sciences

An instrument to remove volatile material from aerosol particles by thermal desorption is presented. The thermodesorber consists of a heated tube, where volatile material is desorbed from the particles, and a water or air-cooled tube, consisting of activated charcoal. This last tube removes desorbed material and thus prevents it from re-adsorbing onto particles. Although designed for measuring particulate emissions from combustion processes it can also be applied to atmospheric aerosols. After theoretical and experimental determination of thermodesorber operating characteristics (temperature profile, losses, removal of desorbed material), examples of applications in several fields are given. Examples of atmospheric measurements at several remote and urban sites are presented. In combustion technology, the thermodesorber is applied to remove all volatile materials, allowing separation of volatile species and the non-volatile core (mainly elemental carbon) of combustion particles. Finally, the thermodesorber is used to study adsorption and desorption processes of polycyclic aromatic hydrocarbons on particles.

Publisher Elsevier**ISSN/ISBN** 0021-8502**edoc-URL** <https://edoc.unibas.ch/74026/>**Full Text on edoc** No;**Digital Object Identifier DOI** 10.1016/S0021-8502(00)00089-6**ISI-Number** 000167484000001**Document type (ISI)** Article