

USE OF MICRO-BEAM X-RAY FLUORESCENCE AS AN EFFECTIVE ANALYTICAL TOOL FOR COMBINATORIAL CHEMISTRY

M. Haschke¹, J. Klein², U. Vietze², W. Stichert²

¹ Röntgenanalytik Messtechnik GmbH, Taunusstein, Germany

² HTE GmbH, Heidelberg, Germany

Combinatorial chemical methods were initially used in the pharmaceutical industry to synthesize a wide variety of organic compounds rapidly. This method involves the parallel synthesis of many compounds and then evaluation to find the compounds with desirable properties. Combinatorial chemistry is now being applied to material science for the development of materials such as high-temperature superconductors, homogeneous and heterogeneous catalysts and magneto-resistive materials. Analysis of the large number of samples generated by combinatorial methods requires highly efficient analytical methods. In this case, not only does the large number of sample analyses present a challenge to the analytical method, but also the small amount of sample available for analysis. Because of the high throughput required for these types of analytical methods, it is often referred to as “High Throughput Experimentation”. Micro-beam X-ray Fluorescence Spectroscopy can satisfy both requirements for high throughput and analysis of small amounts of sample. This paper summarises the requirements for analytical methods used for High Throughput Experimentation in the area of catalyst research and shows some examples of the application of Micro-Beam XRF in this area.