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DEGRADATION OF AMINE SOLVENTS USED FOR CO2 REMOVAL FROM FLUE GAS WITH HIGH CO_2 CONCENTRATION

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Abstract
In the ethanolamine (MEA) solution, during the absorption and desorption of CO_2 undesired compounds are produced as a result of degradation of an amine. Degradation not only reduces the absorption capacity of the solution but also leads to many operational problems. Furthermore, measuring of the degradation products is of great importance in terms of environmental issues. For the determination of MEA degradation products, mainly chromatographic techniques are used, sometimes coupled with other instrumental methods, e.g. GC-MS. As a part of this work, research was conducted to identify MEA thermal and oxidative degradation products and to develop a method for quantitative analysis of the main thermal degradation products such as OZD, HEIA and HEEDA and oxidative degradation products: HEA and HEI. Samples drawn from a test bench for CO_2 capture from synthetic flue gas with an increased content of carbon dioxide were tested. As a research result, a method for the quantitative determination of the main degradation products was developed, the concentrations of degradation products and the rate of their formation were determined, which allows to qualify the solution shelf life.

Keywords: **Carbon dioxide; CCS; Degradation; GC-MS; Monoethanolamine.**