

A STUDY OF HCA AND TWC HYBRID SYSTEM FOR REDUCING COLD-START EMISSIONJ.-K. Cho¹, D.-J. Kim¹, S.-C Lee¹, K.-S. Park², **S.-J Choung¹**¹*College of Environment and Applied Chemistry, KyungHee University, Gyeonggi-Do, Korea*²*College of Advanced Technology, , Korea*

In this study, so as to meet the SULEV (Super Ultra Low Emission Vehicle) regulation, the main idea has been focused on the utilization of HCA (Hydrocarbon Adsorber) in order to adsorb the excess hydrocarbons emitted during a period of engine cold-start. As main recipes of HCA materials, many types of zeolite as well as the combination of alumina, precious metals were used. Representative physico-chemical factors of zeolite such as acidic and hydrophobic properties have been characterized and tried to find the optimum recipe of HCA materials. As results, among the acid properties of zeolites, the Si/Al ratio has found to be the most important factor to get higher hydrocarbon adsorption capacity. Also, the adsorption characteristics of prepared HCA materials have been examined and the catalytic activities of HCA and TWC combined system have been measured in a simulated flue gas and catalytic reactor system. If HCA is used with three way catalyst, it prevents Pd from poisoning by excess hydrocarbons, and in addition, it can induce better catalytic activity in NO_x and CO conversion as well as lowering LOT50 about 20 -30 C.