

Porous Glass Composite as Diesel Particulate Filter and the Microwave Regeneration

Abstract

In this study, porous SiO₂-RO/stainless steel composite body was prepared through the polyurethane sponge replica method. Porous samples obtained through sintering consist of well dispersed and distributed stainless steel particles within the glass matrix. Such microstructure is desired for the purpose as a soot particulate filters (DPF) utilizing microwave rapid and selective heating characteristic, especially during the cold start phase of an engine. Results of microwave heating ability and diesel soot regeneration tests shows that, the fabricated porous composite material is proven to be reliable for rapidly microwave assisted regeneration. Both the regeneration temperature and O₂ composition in the supplied gas played an important role in the regeneration process.

Keywords; Diesel Particulate Filter, Microwave Regeneration, Porous Composite