

NASA awards Phase II STTR contract for Plasma Air Decontamination System

The proposed Plasma Air Decontamination System (PADS) is a trace contaminant control device based on non-thermal atmospheric-pressure plasma technology. Compared to the Trace Contaminant Control System (TCCS) and the Vapor Phase Catalytic Ammonia Removal system (VPCAR), this novel technology operates at ambient temperature and atmospheric pressure, requires less energy, has no moving parts, and requires no consumables. The non-thermal plasma has been proven successful in decomposing various volatile organic carbons (VOCs) found in spacecraft environments. The prototype PADS reactor developed in Phase I has also demonstrated successful removal of ammonia and selected VOCs (e.g., methane, acetone, methylene chloride, and ethylbenzene) in air. The Phase II effort will further optimize this technology and improve its efficiency. It will be designed to interface with both TCCS and VPCAR. Its incorporation would eliminate the high-temperature catalytic reactors in the two systems, and facilitate a decrease in size or total elimination of the intensive resupply of activated carbon for adsorbent beds. This would result in significant savings in launch mass and cost for long duration missions and a reduction in power requirements. It also has great potential to be scaled to various applications and/or incorporated into other life support systems for streamlined air purification. Dr. Yonghui Ma of ORBITEC will be the principal investigator for this project.

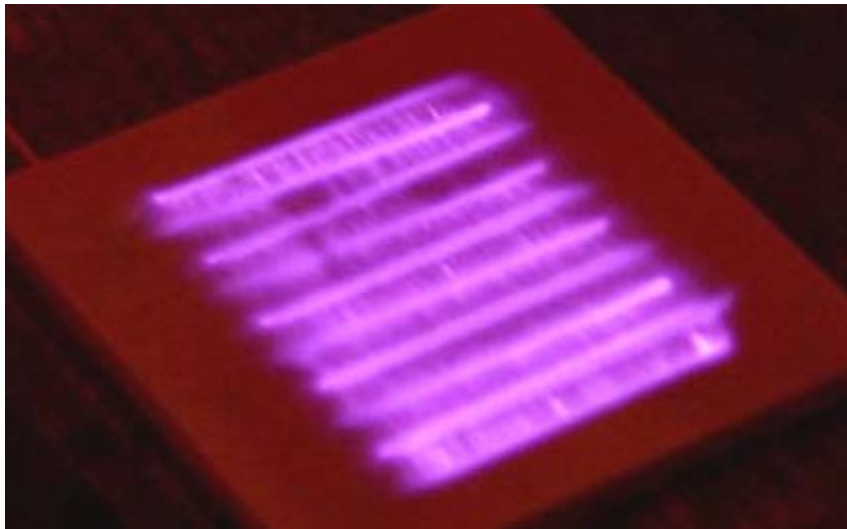


Figure 1. A PADS reactor plate at work