

FCR 21

Office of the President
December 15, 2015

Members, Board of Trustees:

PATENT ASSIGNMENT REPORT

Recommendation: that the Board of Trustees accept the patent assignment report for the period July 1 – September 30, 2015.

Background: At its March 1997 meeting, the Board of Trustees authorized the University of Kentucky Research Foundation to conduct all future copyright and patent filings and prosecutions. Quarterly reports on patent and copyright applications are to be submitted to the Finance Committee of the Board.

Action taken: Approved Disapproved Other _____

PATENT ASSIGNMENTS
FOR THE PERIOD JULY 1 TO SEPTEMBER 30, 2015

Patents

The following assignment on behalf of the Board of Trustees of the University of Kentucky Research Foundation has been executed:

1. **U.S. Patent Application Serial Number: 14/863,818**

Filed: September 24, 2015

Title: Reduction of Amine Emissions from an Aqueous Amine Carbon Dioxide Capture System Using Charged Colloidal Gas Aphrons

Inventors: Xiaobing Li (Center for Applied Energy Research), Jesse G. Thompson (Center for Applied Energy Research), Kunlei Liu (Center for Applied Energy Research)

Technical Description: The invention comprises a system and methods to use colloidal gas aphrons (CGAs) to assist in the removal of misted amine solvents from a carbon capture flue gas.

Summary: When CO₂ is captured from coal-derived flue gas where amine solvents are used, the flue gas can entrain small liquid droplets (called mist) into the gas stream, thus leading to emission of the amine solvent. The result is high solvent loss and decreased CO₂ capture. The method and system disclosed in this invention uses charged CGAs to pull the amine solvents from the mist. The components of this system are (a) generator cell, (b) a capture cell, and (c) an eliminator cell. In the generator cell, a stirrer mixes water and surfactant to create CGAs. Multiple surfactants are commercially available. The CGAs are then pumped into the capture cell. Flue gas is also pumped in to the capture cell in a fashion so that the stream of CGAs and the stream of flue gas are at cross-currents, which provides for enhanced collision of molecules and thus increased capture of misted amines. The CGAs attract the misted amines in the flue stream and are pumped into the elimination chamber. The elimination chamber contains a filter which traps the CGAs and amines. The CGAs and the surfactant are then recovered and returned to the generator cell for reuse. Benefits of this invention include reduced loss of valuable solvent, elimination of fugitive emission, and reduction in the negative environmental impact.

Patent Activities

Fiscal year to date as of September 30, 2015

Number of Patent Applications	1
Number of Patents Issued	6
Patent Gross Revenue	\$ 586,147.36