# Risk Assessment Form (3)

**Must be completed before experimentation.**

Student's Name(s) Kyle Pinzon

Title of Project Optimizing the Adsorption Operating Conditions for Dual Functional Materials in Direct Capture of CO2 from Air

**To be completed by the Student Researcher(s) in collaboration with Designated Supervisor/Qualified Scientist:** (All questions must be answered; additional page(s) may be attached.)

1. List all hazardous chemicals, activities, or devices that will be used; identify microorganisms exempt from pre-approval (see Potentially Hazardous Biological Agent rules).

   Potentially hazardous chemicals will include hydrogen (H2), methane (CH4), nitric acid (HNO3), sodium carbonate (Na2CO3), and Ruthenium (III) nitrosyl nitrate.

2. Identify and assess the risks involved in this project.

   Ruthenium (III) Nitrosyl Nitrate and Nitric Acid are corrosive liquids. H2 and CH4 are flammable gases. Sodium Carbonate can cause irritation to the skin and eyes upon contact.

3. Describe the safety precautions and procedures that will be used to reduce the risks.

   PPE will be worn while handling liquids. Flammable gases will be kept in metal cylinders that are tightly closed in a dry and well-ventilated place.

4. Describe the disposal procedures that will be used (when applicable).

   Standard disposal procedures for liquids will be used.

5. List the source(s) of safety information.

   Institutional guidelines.

**To be completed and signed by the Designated Supervisor (or Qualified Scientist, when applicable):**

I agree with the risk assessment and safety precautions and procedures described above. I certify that I have reviewed the Research Plan/Project Summary and will provide direct supervision.

Robert Farrauto — Designated Supervisor's Printed Name

Robert Farrauto — Signature

6/13/19 — Date of Review (mm/dd/yy)

Prof. of Practice/ Columbia University, Earth and Environmental Engineering — Position & Institution

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Principal Investigator of Lab — Experience/Training as relates to the student's area of research