Abstract – Dr. Gaurav Rajen

This paper proposes a model in which (near a waste heat source and undergoing buoyancy-induced thermal convection) amines carrying hydrogen sulfide (H2S) and carbon dioxide (CO2) in the form of weak heat unstable salts would be repeatedly exposed to catalysts and help create larger macromolecules. Amines have an affinity to interact with CO2 and H2S, form weak salts, and then through exposure to heat release the acid gases and regenerate back to amines. This is the basis for amine systems that scrub H2S and CO2 from waste gases in petroleum refineries and natural gas processing plants. Consider that an amine weak salt carrying H2S and another carrying CO2 is inside a porous catalyst particle (a vesicle) and moves around in a thermal convection cell. As the vesicle moves, it will come close to the heat source and release the H2S and CO2 inside the vesicle. As the vesicle moves away from the heat source, the gases would be reabsorbed into the amines. This process would create stability and a repeating set of reactions, reactants, and products forming and reforming – a key criterion for complex reactions to occur. The carbon entering the amine system would not exit the recirculating amine system as a purer CO2 gas (as in more conventional systems) – eventually, long chain hydrocarbons would exit the system as organic solids, non-aqueous phase liquids, and metal carbonates. These long chain hydrocarbons would provide a path for C to leave the system, and could perhaps be utilized as a fuel source. Metal carbonates could play a role as catalysts in coal to liquid processes and also for construction and/or erosion control The system, in a sense, would essentially duplicate the origins of life as may have occurred near hydrothermal vents in the early stages of complex amino acids combining to form peptides and proteins.