

Chemical Engineer- Fermentation Process- Alberta

Biochemical Engineer to lead a Microbial Fermentation project as part of a multi-disciplinary Research and Development team, to develop advanced technologies for the production of biofuels.

Working at laboratory and pilot scale the candidate will develop, evaluate, and optimize innovative prehydrolysis activities and process designs for pretreatment of a variety of biomass feedstocks converting them to ethanol biofuels.

RESPONSIBILITIES:

Develop and improve methods to estimate efficiency of pretreatment on biomass.

Execute experiments on small and large scale on biomass, using leading pretreatment technologies.

Establish enzymatic hydrolysis data for solids derived from pretreatments with different enzyme formulations and loadings, investigate substrate-enzyme interactions, and characterize the solids pretreated by each of the leading biomass technologies.

Determine main biomass features post treatment that affect and impacts cellulase efficiency including degree of depolymerization of cellulose, crystallinity index, and lignin content

Conduct studies on the impact of additives on saccharification rate and fermentation rate , for an effort to reduce enzyme loadings while achieving high conversion of soluble sugars.

Determine the impact of pretreatment on the selectivity of depolymerization of cellulose and hemi cellulose to oligomers and monomers.

Perform mathematical modeling of pretreatment and evaluate various system configurations that could be more suitable.

QUALIFICATIONS:

Ph.D. in chemical engineering or related scientific field with 6-10 years of related experience. A Master's Degree and additional experience may be substituted for PhD.

Strong background in biological conversion of cellulosic biomass to fuels

Knowledge of enzyme activity and protein assays as well as solid knowledge of enzymatic hydrolysis of pretreated feed stock using leading pretreatment options.

Computer expertise in numerical method and analysis. Technical Software: Microsoft Office, Aspen Plus, Design of Experiments and expertise on use of statistical tools and software.

Knowledge of chemical kinetics and mass and transport phenomena and enzyme catalyzed reactions in reactors.

Demonstrated skills in using general pretreatment equipment [Lab and Large Scale] instrumentation and computer controlled applications.

Experience in mathematic modeling or process engineering calculations.