Coursework on discipline
«Mathematical models of chemical reactors»
specialty 8.05020202
Computer-integrated technological processes and production
B.Chystyakov group HA-51M
Subject: "Modeling radial-axial ammonia synthesis reactor "

In the course work there were described feedstock of ammonia production, it's composition, characteristics and production methods. The characteristic of the product, its quality requirements. During the course work the thermodynamics of ammonia synthesis, energy and energetic efficiency of production has been described, considered target reaction catalysts and best one have been chosen.

The next step physical and chemical bases of the processes of synthesis have been identified, its equation, given the mechanisms of interaction of reactants, rate equation, and the basic conditions of stable high performance synthesis plant. At the end of the first chapter there were described industrial methods of production of ammonia, the concept of production, the structure of the radial columns of ammonia synthesis, its principle of operation and parameters.

In the second part of the course work developed a mathematical model of ammonia synthesis based on kinetic equations and models of flow reactor. Synthesis column was modeled in MathCad environment and developed a software module in the Visual Basic 6, checked the correctness of calculations and presented the findings of the work done.