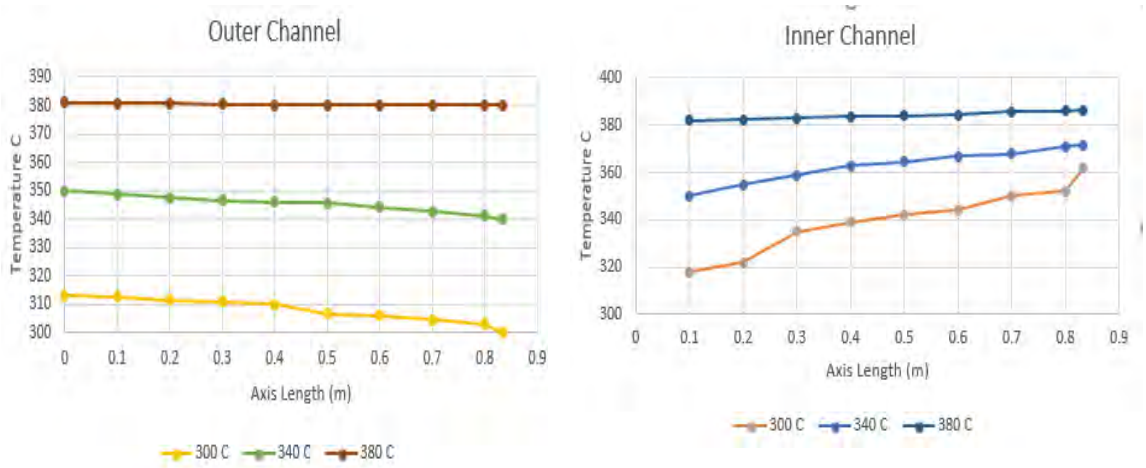

Fig. 1. Dependence of the coolant temperature at 300°C, 340°C , 380°C on the channel length

The results obtained from CFD simulation comes in close agreement with the experimental data as shown in Fig 1. Temperature is plotted along the radial length for inner and outer channels. The graph obtained is compared with the experimental results. All three turbulence models give results in acceptable range closer to the experimental data (5-10) %. The results were obtained for three inlet temperature of 300 °C, 340°C and 380 °C for 25 MPa pressure.

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SYNTHESIS AND APPLICATION OF ZEOLITES IN THE PROCESSES OF FIELD PREPARATION AND PROCESSING OF PETROLEUM FEEDSTOCK

Because of the enormous volume of waste, ash from materials from the combustion of solid fuels for energy production can be an environmental liability. [1, 2] One of the leftovers, ash, can be used to make zeolites, which, in

addition to being more valuable products, have a variety of industrial applications due to their unique ion exchange, adsorption, and catalytic properties. [2, 3]

The simplicity of use and low cost of this residue have resulted in a surge in the volume of scientific research targeted at using it in the development of new goods. Given that it is a source of Al (aluminum) and Si (silicon) for zeolite manufacture and synthesis, it is clear that development is expanding. [3]

Coal ash, which is defined as solid waste from energy generation, is one of the most common residues from thermal energy production. [1-3] Fly ash and slag ash make up roughly 20 million tons of ash and slag waste produced in Russia each year. [2,3]

Garbage-to-municipal-goods recycling is commonly considered nowadays as a way to reduce the quantity of waste transported to landfills, but it is sadly not practiced in Russia. [2]

Part of the ash is known to be used in the country in the production of clinker, which is used in the building industry to make cement, while the rest is thrown in ash dumps or used to plug depleted mine shafts. The composition of coal ash varies widely, ranging from 47 percent to 65 percent silica (SiO2) and 16 percent to 29 percent aluminum or dialuminum trioxide (Al2O3), with some ash promoting zeolite formation. [1-3]

Various types of coal ash and materials for zeolite synthesis will be studied within the framework provided, and experimental development for zeolite synthesis will be chosen. Following that, the synthesis will be modified to increase the yield of the synthesized zeolite, and the material's capacity will be assessed. The zeolite will then be utilized either in environmental objectives, such as separating oil and water produced during oil production, or for catalytic purposes, such as creating a catalyst to aid the purification of light olefins in heavy feedstock. [4]

Thus, for the purposes of ecological raw material use, adsorption applications in oil and water separation, and catalysis, the use of coal ash for the synthesis of zeolites is a promising application, which in the future can be realized for the synthesis of fluid catalytic cracking (FCC) catalytic catalyst by adding rare metals. to zeolite, molecular structure restructuring, and the possibility of subsequent use as a catalyst by adding rare metals.

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SOLVATION AND SUBLIMATION ENTHALPIES OF PARA-SUBSTITUTED BENZONITRILES DETERMINED USING SOLUTION CALORIMETRY AND SOLVATION ENTHALPY GROUP-ADDITIVITY SCHEME

Abstract

Benzonitriles precursors for LED lamps manufacturing. Studying the sublimation enthalpies of the substituted benzonitriles may help to optimize the manufacturing conditions. Their solvation enthalpies were calculated using solvation enthalpy group-additivity scheme. The solution enthalpies were experimentally measured with a standard deviation less than 1 kJ mole-1. From these quantities the sublimation/vaporization enthalpies of 4 substituted benzonitriles were calculated and compared with the literature data.

Introduction

Benzonitriles and substituted benzonitriles have many applications, particularly production of OLEDs due to high photoluminescence [1] and as scaffolds for organic synthesis [2][3]. In this paper fluoro-, chloro-, bromo-, and nitro-substituted nitrobenzenes were studied.

Enthalpy of solvation is the enthalpy change when a solute in the gaseous state dissolves in a liquid solvent at constant pressure. Solvation enthalpies of the studied compounds were determined from the group-additive scheme. It is based upon the division of the compound into two parts, namely the arene core