



The role of chemistry in the field of aviation: Chemical bases of flight efficiency and security

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ABSTRACT

In this article, the role of chemistry in the field of aviation is covered by chemical processes, especially chemical processes to ensure the effectiveness and security of flights. Aviation fuels will analyze the types of air fuel, their lingering features, the chemical reactions that occur in the conditions conditions, and new chemical technologies used in the atmosphere. Modern chemical solutions to reduce environmental security and fuel to the environment will also be considered.

Keywords:

Aviation, chemistry, fuel, security, efficiency, corrosion, artistic safety, environmental security, chemical technologies

The aviation industry, as one of the most complex and surprising achievements of humanity, is constantly developing. One of the key factors in this development is undoubtedly an invaluable contribution of chemical science to the aviation industry. From flight from flights, chemistry play an important role in all processes that are to ensure their safety. Almost all the developing sectors from the day to day is much relevant to the chemistry. Accordingly, the role of chemical science in the air industry is almost recognizable. Fuel and lubricants are one of the main elements of the flight.

The aviation fuel is the main source of energy sources to fly the flight of aircraft, especially aircraft flights. Its composition, combustion process and effectiveness are closely related to chemical processes. Thanks to the achievements of chemistry, the energy density of the airline is increased, and the amount of harmful substances produced during the burning process is reducing. The development of

ecological clean fuels such as bieprousers is also one of the important achievements of chemistry. For example, Airbus-320 Neo's fuel savings is a major advantage for airlines operating in Uzbekistan. The airlines are a high-effective aircraft with local and neighboring countries through the airports. This plane can be the best choice for any country's airlines than other aircraft, along with fuel efficiency.

Lubricants, on the other hand, reduce the friction of aircraft, prolong their operating period and prevents extreme heating. Modern aircraft lubricants are designed to work in extreme temperature and pressure, their composition and properties are optimized as a result of in-depth research of chemistry. The role of chemistry is invaluable in increasing the strength and durability of aircraft in material science. The body of airplanes, wings and other parts are made of different materials. The chemistry studies the chemical composition, strength and resistance of corrosion of these

materials. Composite materials, aluminum alloy materials and other modern materials are widely used in the aviation industry. The development and application of these materials is based on the achievements of chemistry. Important tasks of chemistry in the field of security and environmental protection are that the chemistry plays an important role in aviation security.

The chemical systems, explosive substances used to combat fire, and in the aircraft cleaning systems are based on chemistry. It is also important to reduce the aviation industry on the environment.

The study of the composition of waste gases and the development of new technologies, biofuels such as biofuels, clean fuels, is based on the achievements of chemistry. Composition and properties of air traffic materials from fuel and lubricants:

*Hydrocarbons: is a key component and is an energy source.

*Supplements: added to improve concealment, freezing temperature and improving other features.

*The combined temperature: should be high, which provides effective burning in aircraft engines.

*Highlights: Must be optimal, this provides good flow in the fuel system.

*Freezing temperature: Must be low, it ensures that it will be fuel in liquid state.

*Oxidation stability: must be high, ensures long-term storage of fuel.

Apparently, all this dates back to the foundation of chemistry.

Tasks of lubricants:

*Reducing friction: reducing the friction of parts and prolongs their operating period.

*Cooling: Protects the parts from overheating.

*Corrosion protection: protects parts from corrosion.

*Cleaning: Clears parts from dust and other pollutants. Composition and properties of lubricants:

*Oils: is the main component, reducing friction.

*Supplements: increases to improve oxidability, to improve the stability of oxidation and improve other features.

*Highlights: Must be optimal. Provides good lubrication among these parts.

*Oxidation stability: must be high, ensuring that oil is long-term.

*Heat resistance: Must be high, which saves the oil properties of oil in the conditions of temperature.

*Anti-corrosion features: must be high, protects these parts from corrosion.

The airline plays an important role in ensuring the efficiency, safety and environmental purity of flights. In the future, the achievements of chemistry make a significant contribution to the development of the aviation industry and raises the higher the achievements of humanity in the field of flight.

Used literature

1. <https://gemini.google.com/app/15e048abc50aa80a>
2. <https://uz.wikipedia.org/wiki/>
3. Alimova Z.X., Sabirova D.K., Niyazova G.P. Dvigatel moyning ishlash muddatini oshirish yo'llari. So'ngi ilmiy tadqiqotlar nazariyasi respublika ilmiy-uslubiy jurnali. 7-jild. 5-son. 2024. 344-348b.
4. Alimova Z.X., Sabirova D.K., Niyazova G.P. (2023). Motor moylarining ishlash jarayonida xususiyatlarini o'zgarib borish sabablari va oqibatlari. Evraziyskiy jurnal texnologiy I innovatsiy. 1(4). 44-47.
5. Alimova Z.X. Transport vositalarida ishlatiladigan ekspluatatsion materiallar: Darslik/-T.: "VNESHINVESTROM", 2019.-235b.
6. Alimova Z.X., Sabirova D.K., Niyazova G.P. Plastik surkov moylarining xossalari bo'yica ishlatishga tavsiyalar berish. So'ngi ilmiy tadqiqotlar nazariyasi respublika ilmiy-uslubiy jurnali. 7-jild. 4-son. 2024. 70-74b.
7. Raxmonov, A. (2018). *Metallar va ularning sanoatdagagi ahamiyati*. Tashkent: O'zbekiston Fanlar akademiyasi.
8. Sabirova D.K., Bobonorov A.N. Abdusaidov N.A. Metallarning inson hayotidagi o'rni. (2025). Journal of new century innovations, 72(1), 302-304.