



The Russian Federation
Nizhny Novgorod State Technical University named after R.Y. Alekseev
Nanotechnology and Biotechnology Department
www.ntonu.ru/nbt

The Experimental Investigation of Gasoline Permeation through New Polymeric Materials for LCV

Ilya V. VOROTYNTSEV - presenter

Andrew Vorotyntsev, Goerge Mochalov, Ilya Vorotyntsev

NNSTU – the best traditions of Soviet and Russian engineering school



GAZ – Russian producer of LCV



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- **Introduction**
- **Experiment**
 - **Material detection**
 - **Gasoline permeation techniques**
- **Result and Discussion**
- **Conclusion**



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ASTM D814: Standard Test Method for Rubber Property — Vapor Transmission of Volatile Liquids



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INTRODUCTION



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	Advantages	Disadvantages
Metal	High temperature resistance Solidity	Price Corrosion Conductive Weight
Plastic	Price Low corrosion Lighter weight Vibration/sound damping Easily forming	Soft UV-corrosion



Fuel tank



Key word is “safety”:

- evaluate the real-world environment that will impact the product,
- chemical exposure or contact solutions,
- temperature ranges,
- shielding,
- forces (including worst-case scenarios)
- **FUEL PERMEABILITY!**

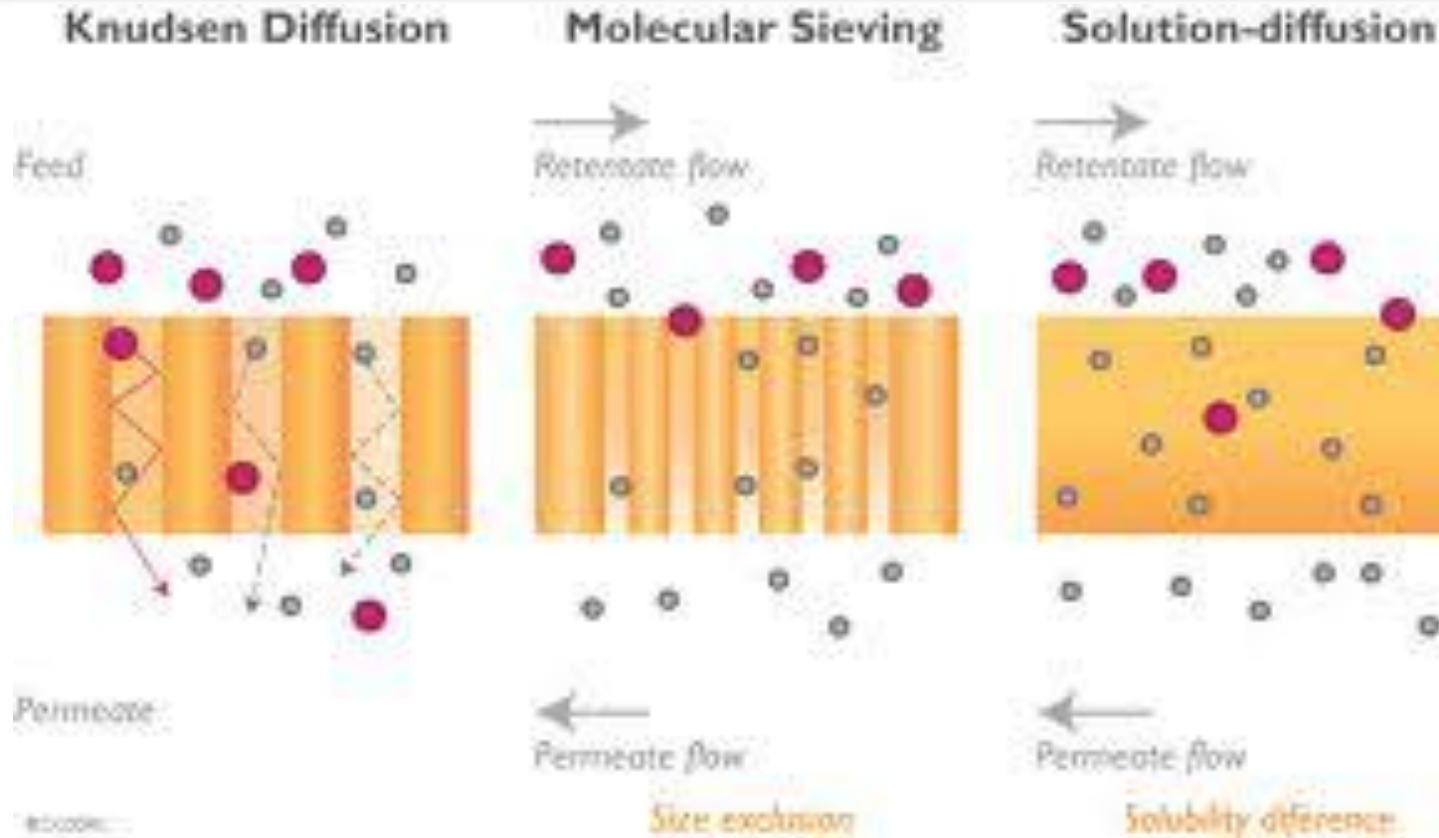


- Introduction
- **Theoretical background**
- Modeling
- Mathematical model verification
- Conclusion

THEORY



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Permeability of vapour and liquids may lead by different mechanisms. The most common mechanisms are diffusion-solution model and Knudsen flow

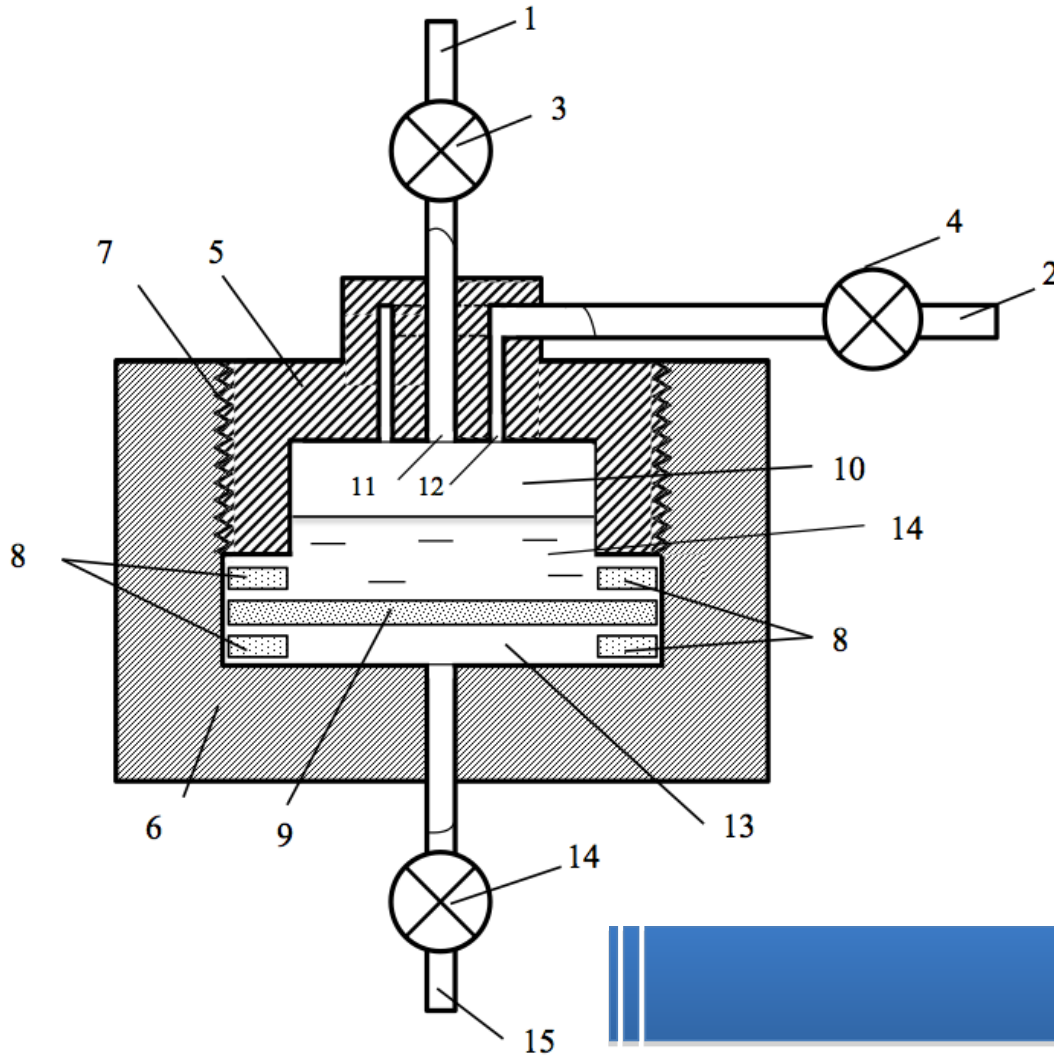
VERIFICATION



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Testing module





- Introduction
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CONCLUSION



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The new approach for testing new polymeric materials was observed. The comparison theoretical and experimental data shows applicability of this procedure for automobile industry, especially developing of light commercial vehicle.



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Thank you for kind attention!
Welcome with your question...

NNSTU n.a. R.Y. Alekseev

Minina str., 24
603950, Russia, Nizhny Novgorod

www.en.ntnu.ru www.ntnu.ru/nbt

Tel: +7 (831) 4-360-361

Fax: +7 (831) 4-360-361

[E-mail: nbt@ntnu.nnov.ru](mailto:nbt@ntnu.nnov.ru)





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