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Patent Search

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Abstract:

The present invention is related to drug delivery systems and a method to identify the flow pattern of drug delivery systems using nanoparticles (110) in a cylindrical tube (210). Nanoparticles (110) are injected into the blood vessel (140) nearest the diseased affected location (120), such as a tumor. The injected nanoparticles act like heat sources near the affected location (120). The drug is placed on the nanoparticles. The drug concentrates near the affected area/ gets absorbed by the areas, preventing the uniform drug distribution in the blood circulatory system. The nanoparticles (110) in the drug are trapped along with the fluid flow, and the effects of various parameters such as micropolar parameter, Brownian motion parameter, and Thermophoresis parameter are studied. The velocity and lux flow rate variations are calculated by models assisted by artificial intelligence and machine learning algorithms. The flux increases with elasticity, micropolar, thermophoresis, and coupling numbers.

[Complete Specification](#)

Claims:CLAIMS

We claim

- A method (300) of identifying the flow pattern of nanoparticle-based drug delivery systems using nanoparticles, the method comprising:
 - Injecting nanoparticles (110) with a drug into the blood vessel nearest to the affected area (120);
 - Formation of a heat source near the affected area;
 - Concentration of the drug near the affected area (120);
 - Absorption of the concentrated drug in the center of the affected area;
 - Trapping of nanoparticles (110) in the drug along with the fluid flow;
 - Calculation of velocity and flux rates;
 - Calculation of the variations in the flux rates;
 - Determining the effects of various parameters such as micropolar parameter, Brownian motion parameter, and thermophoresis parameters
- The nanoparticles as claimed in claim 1, consists of a drug to be used to treat the disease.
- The drug as claimed in claim 2, is placed on the nanoparticles.
- The nanoparticle as claimed in claim 1, is selected from metallic, organic, inorganic and polymeric nanostructures, including dendrimers, micelles, and liposomes.
- The formation of the heat source as claimed in claim 1. is due to the presence of the injected nanoparticles

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