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A New Mathematical Model of Human Olfaction

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Abstract : It is known that in humans, the adaptation to a given odor occurs within a quite short span of time (typically one minute) after the odor is presented to the brain. Different models of human olfaction have been developed by scientists but none of these models consider the diffusion phenomenon in olfaction. A novel microscopic model of the human olfaction is presented in this paper. We develop this model by incorporating the transient diffusivity. In fact, the mathematical model is written based on diffusion of the odorant within the mucus layer. By the use of the model developed in this paper, it becomes possible to provide quantification of the objective strength of odor.

Keywords : diffusion, microscopic model, mucus layer, olfaction
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