

EHDA closed loop control system based on real time non-visual spray mode classification

(Center, Bold, Times New Roman 14, maximum 15 words in english)

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Abstract

This article presents a closed-loop control system for EHDA (Electrohydrodynamic Atomization) that utilizes real-time, non-visual spray mode classification to improve performance and efficiency. EHDA is a method of atomizing liquids using an electric field, which can generate droplets smaller than the nozzle diameter with a controlled droplet size. The system uses current data to classify the spray mode dynamics in real-time and adjust EHDA parameters such as pump flowrate and power supply voltage to reach the desired spray mode and stabilize it. The proposed control algorithm is able to achieve improved accuracy and reduced waste compared to previous methods. The potential applications of the system are discussed, including in industrial processes such as spray coating and inkjet printing. EHDA has been widely used in various fields such as agriculture, biomedical and energy, specifically in the production of micron- and nano-size droplets for better control and efficient in the process.

Keywords: Keyword 1; keyword 2; keyword 3; keyword 4; keyword 5

1. Introduction (10pt, bold)

The introduction is about 400-600 words and provides background information, previous references related to the main topic, reason, purpose of the research, and the novelty of the research. Content should be relatively non-technical, but clear enough for a knowledgeable reader to understand the manuscript's contribution. Explain what the purpose of the research is and why the research was conducted the main body of the article should begin with an introduction, which provides further details on the purpose of the paper, motivation, research methods, and findings. For citations use numbering which must be used for reference titles, for example, citations for journals consisting of 1 article [1] or two articles [2], [3], while for writing citations of more than two articles [4] - [7].

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2. Methods (10pt, bold)

The methods section describes the steps followed in the execution of the study and also provides a brief justification for the research methods used. A chronological explanation of the research, including research design, research procedures (in the form of algorithms, codes, or others), how the procedures are to obtain and test data [8] - [23]. The description of the research has been supported by references, so that the implementation can be accepted scientifically [6]. Figure are presented in the center, as shown below and are cited in the manuscript. An example of a membership function graph can be seen in Figure 1.

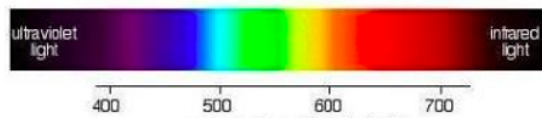


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2.1. Table (10pt, bold)

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Characteristics	Description	Frequency	Percentage
Gender	Male	198	80.2%
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	2019	64	25.9%
	2020	59	23.9%
	2021	70	28.3%
MBKM	Yes	217	87.9%
	No	30	12.1%
	Total	247	100%

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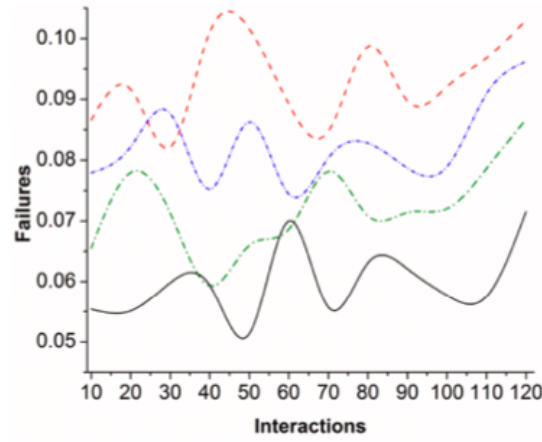


Figure 2. Font 10pt and center not bold for captions except for the words "Figure"

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3.1. Equation (10pt, bold)

Mathematical equations must be numbered sequentially and starting with (1) until the end of the paper including the appendix. This numbering must begin and end with an opening and closing parenthesis and right align. Add one blank space above and below the Eq. 1.

$$\chi(L(\Gamma); \lambda) = (\lambda + 2)^{m-n} \chi(\Gamma; \lambda + 2 - k) \quad (1)$$

For example, from Eq. 2 it is derived again the next mathematical equation

$$\chi(L(\Gamma); \lambda) = \det(\lambda I_m - A_L) \quad (2)$$

Or there is the next mathematical Eq. 3 as below

$$\det(D_0 D_0^t) = \sum_{|U|=n-1} \det(D_U) \det(D_U^t) \quad (3)$$

3.2. Therema (10pt, bold)

The schema for writing definitions, theorems, lemmas, and proofs conforms to and follows the template below.

Theorem 1 *Theorem is a statement about mathematics that still requires proof and the statement can be shown to have a truth value or is also true.*

3.2.1. Lemma (10pt, bold)

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5. Acknowledgement (if any)

Contains an acknowledgment of thanks to an agency if this research was funded or supported by that agency, or if there were parties who significantly assisted directly in the research or writing of this article. If the party is already listed as the author, then there is no need to mention it again in this Acknowledgment

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