Title	「消す」「消える」ことが可能な湿度センシングに着目した消火訓練用疑似炎デバイスの研究
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Citation	
Issue Date	2024-03
Type	Thesis or Dissertation
Text version	author
URL	http://hdl.handle.net/10119/18986
Rights	
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Abstract

Firefighting drills based on the assumption of a fire often involve judging the situation only from flames drawn on a board. A major problem is that daily firefighting drills are far removed from the actual fire scene, where it is important to evaluate the flames and smoke, make decisions on firefighting methods, and give orders to crews and other personnel to conduct activities. One of the reasons why it is difficult to conduct firefighting drills involving the burning of wood and other combustible materials in daily drills is the environmental problem of air pollution caused by the smoke generated when combustible materials are burned, and the problem of facilities that do not allow firefighting drills to be easily conducted under conditions similar to those of a fire. One possible solution to this problem is technology that simulates flames. We propose a technology that dynamically controls the size of the pseudo-flame according to changes in humidity, by combining the fog generated by an ultrasonic atomizer with a full-color LED lighting device to create a three-dimensional, highly realistic representation of the flame and by comparing the "humidity" of the space to the "oxygen concentration" in the space during combustion. Furthermore, we propose a function to reproduce the waning of flame momentum and fire extinguishing caused by direct water discharge, thereby enabling real-time reproduction of changes in flame light caused by oxidation reactions. This will enable highly effective and practical firefighting training, and will lead to the realization of a new firefighting training pseudo-flame system. The realization of this system will make it possible for firefighters to protect themselves by considering the inflow of oxygen, which is an auxiliary combustion material of flames, when they enter a room to discharge water, assuming a room fire. Therefore, when entering a hazardous area, it is important not to just rush in blindly, but to think and predict what will happen next, and to make the best judgment while minimizing the danger. This training method using the pseudo-flame device will enable highly efficient training to be repeated, and will be highly effective in creating new firefighting tactics.