ISSN: 2641-192X
DOI: 10.33552/JTSFT.2026.12.000794
Journal of
Textile Science & Fashion Technology
Iris Publishers

Mini Review

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Artificial Aurora generation by Laser-plasma interaction can be a Modern Fashion of Dynamic Decoration

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Received Date: October 30, 2026

Published Date: November 04, 2026

Abstract

This work suggests a novel use of laser-plasma interactions for modern fashion of dynamic decoration. It is demonstrated that varying the characteristics of gas and laser-pulse power a variety of fascinating patterns of artificial aurora can be used for decoration.

Keywords: Modern fashion trends, dynamic decorations, artificial aurora generation, dynamic spectrum, visible spectrum

Introduction

Physics is really a fundamental science and has led to much technological advancement, which have been playing a positive role for humans. The physics can be applied in fashion industry. The charged particle precipitations from Earth's magnetosphere to its ionosphere and neutral atmosphere naturally occur during storms. These charged particles when interact with neutral atoms and molecules colorful lights are emitted. This phenomenon is called aurora. The modern trends in fashion and decoration can attain are very high level with the help of artificial aurora generation [1]. This work suggests a novel method of modern decoration fashion, specifically, artificial aurora generation by laser and plasma interactions.

The paper is organized as follows. Section II is about methodology and apparatus and results. Main findings are summarized and concluded in section III.

Methodology and Apparatus and possible Results

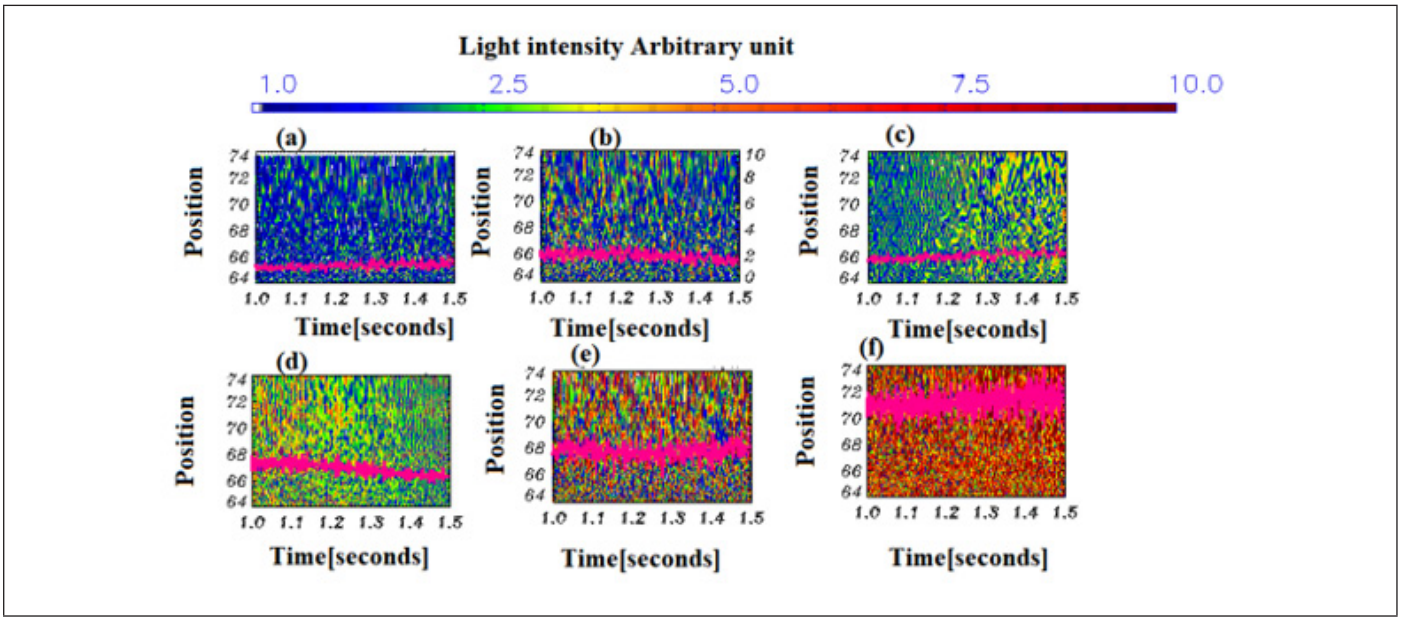
The apparatus required for artificial aurora generation requires two main components. Specifically, laser-pulse, and gas filled chamber. Laser pulse is required to cause photo-ionization of gas and acceleration of generated electrons to high energies to cause excitation of atoms and molecules. These excited molecules and atoms when return to their normal states photons of various energies will be emitted. Their wavelengths can be visible part of the spectrum of electromagnetic radiations. These will appear as colorful light, and so-called artificial aurora. This can be a dynamic decoration. The example is demonstrated in Figure 1. For panel (a), assumed laser pulse power is (arbitrary units) that smallest in six options used six panels (a-f). Here the generated artificial aurora light intensity is smallest, as indicated by scale of the color bar. For panels (b)-(f), the laser pulse powers are respectively. The increase in laser pulse power caused enhancements in the intensities of

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the artificial aurora. This pattern of Figure 1 is dynamic pattern because it evolves with time and can be applied as modern fashion of decoration.

Summary and Conclusions

The dynamic fashion of decoration is demonstrated here via novel method, artificial aurora generation. This requires a simple apparatus comprising of two components. The variations in laser pulse power and gas filled chamber directly led to fascinating patterns of colorful lights analogues to aurora. This is yet another application of the laser-plasma interaction.



shows the artificial aurora generation in arbitrary gas driven by laser pulses of increasing powers for panel (a) the laser pulse power is smallest and for (f) power is highest.

Acknowledgements

Ibne-wail is appreciated for critical discussion.

Financial statement

There is no funding for this work.

Ethics declaration

not applicable.

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