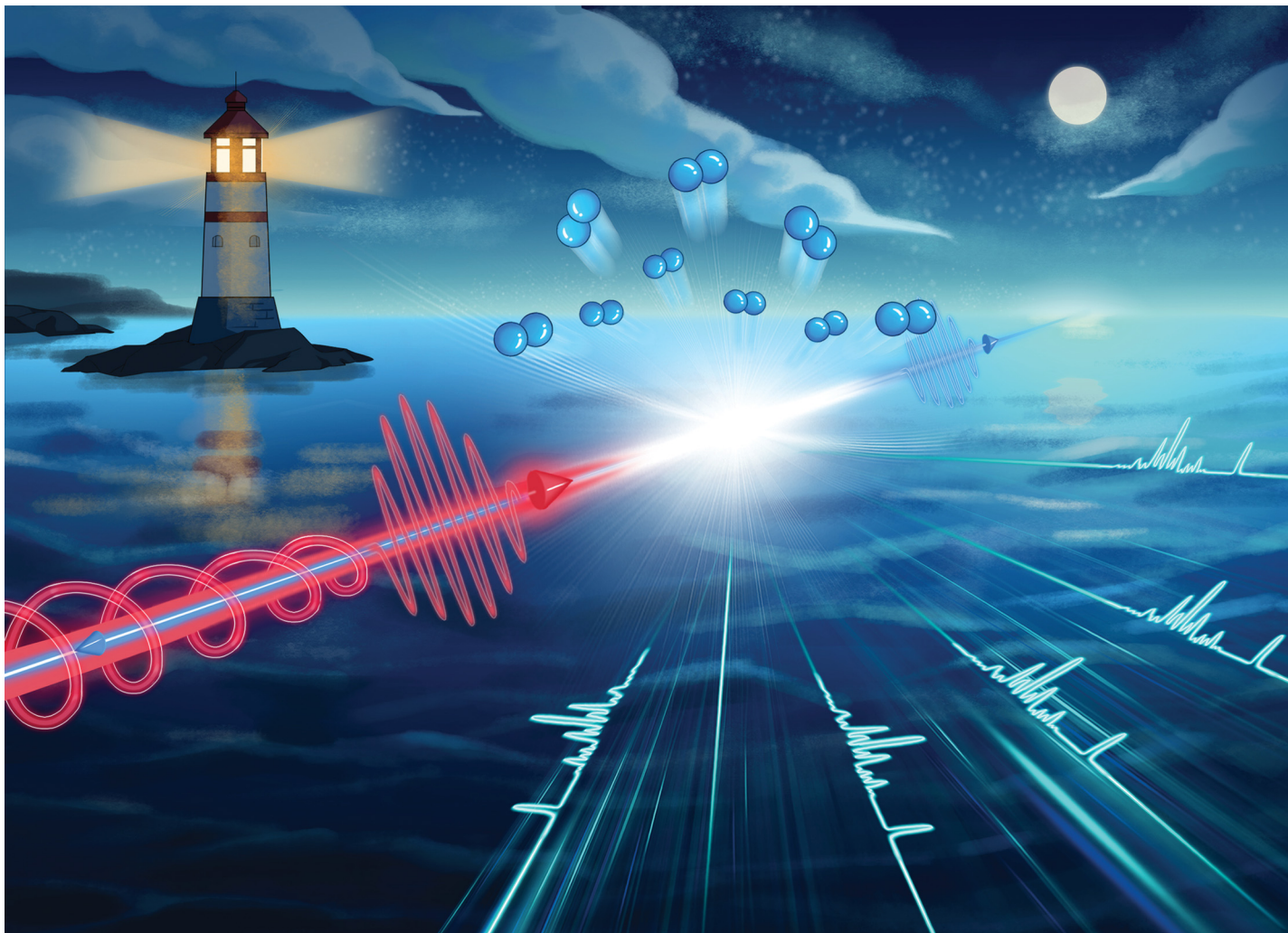


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Showcasing research from the group of Professor Yi Liu at University of Shanghai for Science and Technology, China

Fluorescence and lasing of neutral nitrogen molecules inside femtosecond laser filaments in air: mechanism and applications

Femtosecond laser filaments in air produce unique fluorescence and lasing effects from neutral nitrogen molecules. This review explores the mechanisms behind these phenomena, focusing on the dominant role of electron collision excitation in forming excited nitrogen states. We discuss the properties of forward and backward lasing emissions, highlighting the impact of pump pulse polarization and gain dynamics. Applications in remote spectroscopy and electric field detection are presented, showcasing the potential of air lasing for optical remote sensing.

As featured in:



See Yi Liu *et al.*,
Phys. Chem. Chem. Phys.,
2024, **26**, 23528.