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Droplet Oscillation and Pattern Formation during Leidenfrost Phenomenon

Gayatri Paul, Prasanta Kumar Das, Indranil Manna

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**Droplet Oscillation and Pattern Formation during Leidenfrost Phenomenon**Gayatri Paul<sup>1</sup>, Prasanta Kumar Das<sup>1</sup>, Indranil Manna<sup>2,3</sup><sup>1</sup>*Department of Mechanical Engineering, IIT Kharagpur, West Bengal, India*<sup>2</sup>*Department of Metallurgical and Materials Engineering, IIT Kharagpur, West Bengal, India*<sup>3</sup>*Department of Materials Science and Engineering, IIT Kanpur, Uttar Pradesh, India***Corresponding Author:**

Dr. P. K. Das,  
Professor and Head  
Mechanical Engineering Department  
Indian Institute of Technology Kharagpur  
Kharagpur-721302, India  
Phone No: +91-3222-282916  
Fax: +91-3222-255303  
Email: pkd@mech.iitkgp.ernet.in

**Abstract**

The unique dynamics of a water droplet over a hot copper substrate due to Leidenfrost evaporation has been reported here. The phenomenon is captured by a high speed camera and analyzed by image processing. During its entire lifetime, the droplet is observed to undergo several shape changes accompanied by simultaneous oscillation and rotation. Further the depletion of droplet volume and substrate temperature has also been reported.

**Keywords:** Leidenfrost Phenomenon, Oscillation, Rotation, Pattern formation, Film boiling

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