

## عنوان مقاله:

Hydrophobic Impact of a Droplet on a Solid Cylinder: Experiments and Simulations

## محل انتشار:

بیست و ششمین همایش سالانه بین المللی انجمن مهندسان مکانیک ایران (سال: 1397)

تعداد صفحات اصل مقاله: 8

## نویسندگان:

Seyed Javad Pishbin - *Student Department of Mechanical Engineering, Ferdowsi University of Mashhad, Mashhad, Iran*

Alireza Sheikhi - *Student Department of Mechanical Engineering, Ferdowsi University of Mashhad, Mashhad, Iran*

Javid Zohrabi - *Graduate Student Department of Mechanical Engineering, Ferdowsi University of Mashhad, Mashhad, Iran*

Mohammad Pasandideh-Fard - *Professor Department of Mechanical Engineering, Ferdowsi University of Mashhad, Mashhad, Iran*

## خلاصه مقاله:

In this paper, the impact of water drops on hydrophobic cylinders is studied using both experiments and simulations. The diameter of the generated water droplets is 2.54mm. A high speed camera is used to capture photos of the impact with a time step of 1ms. The diameters of the cylinders used ranged from 0.48mm to 1.62mm. After the impact, the droplet separates into two different sub-droplets at each side of the cylinder. Smaller secondary droplets are also generated after the impact. A change in the behavior of the drop after the impact is observed compared to the impact on hydrophilic cylinders. The effect of changing the location of the impact and the off-centric collision is also researched. A numerical simulation of the impact is also obtained using the interFoam solver of the OpenFoam software. The technique used by the solver is the volume-of-fluid (VOF) method. The numerical simulations are then validated by a comparison of the results with those of the experimental images.

## کلمات کلیدی:

droplet Impact. Cylindrical Hydrophobic Surfaces, Numerical Simulation Surfaces

## لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/817420>

