

## عنوان مقاله:

Experimental Study on the Dynamics of a Moving Droplet Impacting a Sessile Droplet

## محل انتشار:

دوماهنامه مکانیک سیالات کاربردی، دوره 17، شماره 2 (سال: 1403)

تعداد صفحات اصل مقاله: 12

## نویسندگان:

D. Chen - Key Laboratory of Fluid Transmission Technology of Zhejiang Province Zhejiang Sci-Tech University, Hangzhou, 310018, China

L. Ming - Key Laboratory of Fluid Transmission Technology of Zhejiang Province Zhejiang Sci-Tech University, Hangzhou, 310018, China

T. Wang - Key Laboratory of Fluid Transmission Technology of Zhejiang Province Zhejiang Sci-Tech University, Hangzhou, 310018, China

M. Qiu - Key Laboratory of Fluid Transmission Technology of Zhejiang Province Zhejiang Sci-Tech University, Hangzhou, 310018, China

Z. Lin - Key Laboratory of Fluid Transmission Technology of Zhejiang Province Zhejiang Sci-Tech University, Hangzhou, 310018, China

## خلاصه مقاله:

The phenomenon of droplets impacting droplets is common in many fields including the chemical, nuclear, and aerospace industries. In this paper, high-speed photography technology is used to obtain the variation law and evolution properties exhibited by droplets colliding with sessile droplets of varying sizes. We further explored how the Weber number ( $We$ ) and volume ratio ( $V_p/V_i$ ) influence the behavior of droplets colliding with sessile droplets. The phenomenon of droplets impacting sessile droplets of different volumes is different from that of droplets impacting liquid films. In terms of droplet spreading, compression and the non-splashing liquid crown, the phenomena and laws reported in the present study are applicable for  $1 \leq We \leq 165$  and droplet volume ratios of  $1 \leq V_p/V_i \leq 6$ . With a low Weber number, the droplet compresses and deforms downward without coalescence at the initial stage of collision. A high Weber number results in a no-splashing liquid crown. These findings provide important insights into the dynamics of droplet-droplet interactions.

## کلمات کلیدی:

Droplet impact, Sessile droplet, Volume ratio, No-splashing liquid crown, Droplet compress

## لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/1846993>



