

TPA 15: BUBBLE INTERACTION

Introduction

Bubbles and foams are important features of liquid surface phenomena, but they are difficult to animate due to their thin films and complex interactions in the real world. In particular, small bubbles (having diameter $< 1\text{cm}$) in a dense foam are highly affected by surface tension, so their shapes are much less deformable compared with larger bubbles.

Objective:

Use particle-based algorithm to simulate bubble dynamics and interactions.

Input:

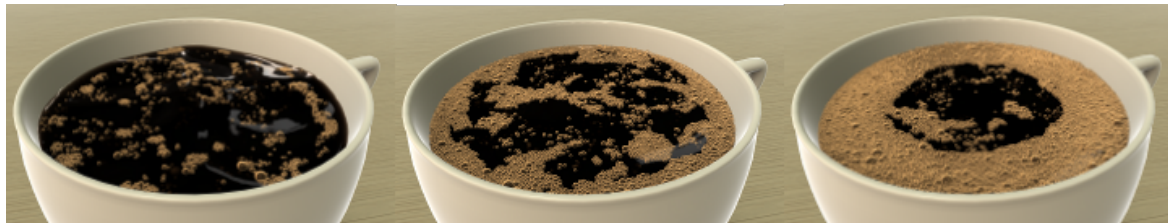
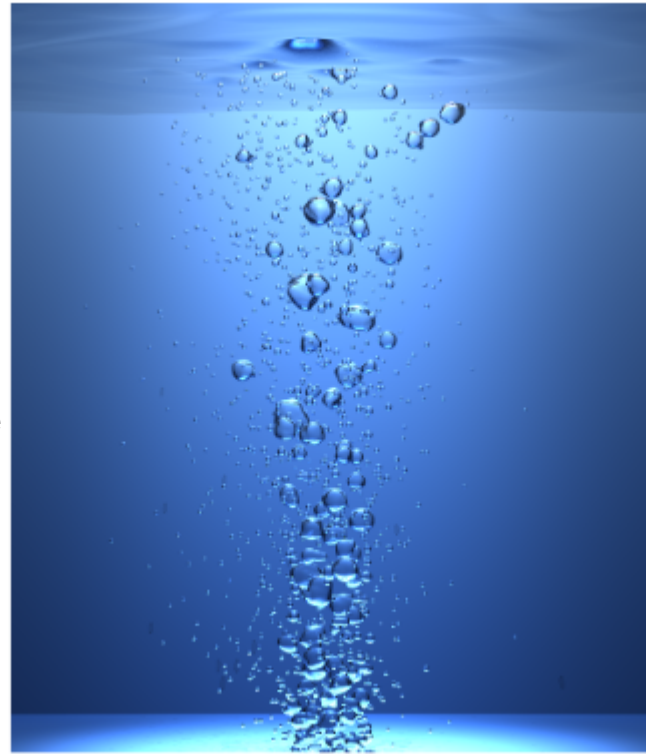
Liquid density, viscosity (surface tension), bubble volume and velocity and lighting.

Output:

Animation showing

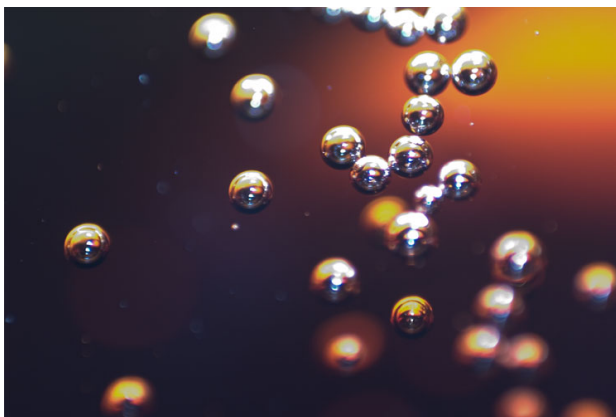
Sparse bubble formation and bursting

the interaction (merging, splitting) of bubbles due to fluid movement (within fluid, on the top of the surface).



References:

1. "Animating bubble interactions in a liquid foam", Oleksiy Busaryev, Tamal K. Dey, Huamin Wang, and Zhong Ren, ACM Trans. Graph. 31, 4, Article 63 (July 2012)
2. "Simulation of swirling bubbly water using bubble particles", Ho-Young Lee, Jeong-Mo Hong, Chang-Hun Kim, The Visual Computer, Volume 25, Number 5-7, 707-712, 2009.
3. Jeong-Mo Hong, Ho-Young Lee, Jong-Chul Yoon, and Chang-Hun Kim. 2008. Bubbles alive. ACM Trans. Graph. 27, 3, Article 48 (August 2008).



www.shutterstock.com · 55842826