

## On the use of Cooling Microchannel for Preventing Thermal Runaways in Power Battery Systems

Krishnadas, 윤영각<sup>1</sup>, 이철진<sup>1,†</sup>

중앙대학교; <sup>1</sup>중앙대학교 화학신소재공학부

(cjlee@cau.ac.kr<sup>†</sup>)

Frequent fire accidents arising from thermal runaways in high power battery pack systems in Electric Vehicles (EV) and Hybrid Electric Vehicles (HEV) have become a prime concern among car makers as the issue now is working as the primary bottleneck in the mass deployment of these environment friendly vehicles on the roads. Several methods – air cooling, liquid cooling, and phase change method – exist in literature for thermal management and preventing thermal runaways in such power battery systems like LiO power battery systems. Microchannel cooling method have been proven to be highly effective in many areas of applications, including highly exothermic Fisher–Tropsch reaction. Herein, in the case of LiO power battery systems too, we proposed a novel microchannel cooling design for better thermal management and preventing thermal runaways based on our results of various modeling, simulations, and optimization of thermal management design of LiO Battery systems.