From,
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Palakkad

Subject: *Request letter for the COMSOL software (Advanced Modules) license for research purposes*

I am presently doing my research at IIT Palakkad, Kerala and I am in my second semester of PhD. My broad area of research topic is – **Battery Thermal Management System (BTMS) of Prismatic Cells using Phase Change Materials (PCMs) with hybrid cooling techniques**. Inline with the Nation's vision of green environment, developing affordable, high performance electric vehicles is significant. Researchers worldwide are making significant advancements in this field, resulting in the development and availability of high-quality electric vehicles for the public usage. Many recent studies have indicated that lot of research is being concentrated in this area and many simulation studies have been carried out across the globe leading to promising results, but these are to be tested vigorously before they can be mass manufactured.

A journal published by **Applied Thermal Engineering** in 2023, titled – 'Research on battery thermal management system based on liquid cooling plate with honeycomb-like flow channel', the author has used COMSOL Multiphysics software to do the simulation. In a recent paper, published by **Energy** in 2024, titled – 'Performance enhancement of a battery thermal management system using novel liquid cold plates with micro-channel featuring pin fins', the author has done CFD simulation using ANSYS.

This indicates that, there is a need for in depth analysis of the BTMS and analysis is done using simulation software as COMSOL and ANSYS are generally preferred. In my research, I would like to perform the simulations and to understand the physics and need to use COMSOL for my research. Since this involves PCMs and associated BTMS, I would request license for the Advanced Modules of COMSOL, specifically

1. Battery Design Module
2. CFD Module
3. Heat Transfer Module
4. Liquid & Gas Properties Module
5. Material Library
6. Microfluidics Module
7. Pipe Flow Module
8. Porous Media Flow Module

With reference to the above subject, I would like to request you for the license for the above-mentioned modules of the COMSOL. Kindly consider my application and oblige. Expecting a positive response at the earliest from your end.

Thank you,

Yours sincerely,
Abhiram E R

Guide Recommendation, Strongly recommeded. Please Proride the requested licences.
Samarjeet 11/03/2025
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