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Presentation title: Challenges & Opportunities of hybrid reactive-extractive distillation

Abstract: The reactive-extractive distillation (RED) combines the advantageous features of both reaction and extractive distillation processes as a single unit operation. Compared to the single use of conventional reactive or extractive distillation processes, RED is less energy intensive as it utilizes the heat generated from the reaction for the subsequent separation. This makes RED an attractive method for ternary azeotropic separation, as evidenced by the growing number of publications on this topic since 2020. Some studies have further intensified the RED system to achieve energy savings. However, a significant limitation observed in all intensified RED studies is the inability to realize energy savings, which contrasts with the results of most conventional distillation studies. This lecture aims to introduce the concept of RED and explore the opportunities and challenges associated with its implementation.

Keywords: Advanced distillation; Process simulation; Process Intensification