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# An overview of mathematical, physical and computational challenges in chemical enhanced oil recovery

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Chemical enhanced oil recovery, specially surfactant-polymer flooding, involves porous media flows of simple and complex fluids through highly heterogeneous formations. We will discuss various models based on systems of partial differential equations which pose a variety of mathematical and computational challenges. We will start a dialogue on these challenges with some possible pathways to address these challenges thereby opening doors for new and challenging problems in this area. Our current efforts to develop high performance numerical methods and results based on these models will be discussed. Effects of various chemical agents on oil recovery as well as various fluid mechanical phenomena including fingering and channeling will presented and discussed.

## References

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**Primary author:** DARIPA, Prabir (Texas A&M University)

**Presenter:** DARIPA, Prabir (Texas A&M University)

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