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**Huiqiang Jiang\*** (hqjiang@pitt.edu), University of Pittsburgh, 301 Thackeray Hall,  
Pittsburgh, PA 15260. *On a type of free boundary problems arising from material science.*

We will discuss various variational free boundary models on liquid crystal and liquid metal. Results on existence of minimizers and regularity of free boundaries will be presented. (Received July 04, 2007)