Abstract Submitted
for the DFD10 Meeting of
The American Physical Society

Contact-line motion past sharp corners: from spreading to jetting
PETER SPELT, Department of Chemical Engineering, Imperial Colege London, YI SUI, Department of Chemical Engineering, Imperial College London — A level-set method for the simulation of two-phase flows with moving contact lines has been adapted to simulate contact-line motion past sharp corners numerically. The method is not restricted to creeping-flow regimes, and alleviates the stress singularity at a moving contact line by the use of a slip condition. First, the detailed flow behaviour is studied at the instance when the contact line moves past a corner, as well as that at later times, to see to what extent this deviates from conventional spreading behaviour. The method is then used to investigate the motion of a liquid out of an injection channel. Several flow regimes are observed, including a transition from spreading to jetting.

Peter Spelt
Department of Chemical Engineering, Imperial Colege London

Date submitted: 09 Aug 2010 Electronic form version 1.4