1126-35-53          **Yuanzhen Shao\*** (`shao92@purdue.edu`), 150 N University St, West Lafayette, IN 47907, **Gieri Simonett** (`gieri.simonett@vanderbilt.edu`), Nashville, 37240, and **Jan Pruss**. *Regularity of the interface of a thermodynamically consistent two-phase Stefan problem.*

We study the regularity of solutions to a thermodynamically consistent two-phase Stefan problem with or without kinetic undercooling. It is shown that the free interface of the problem immediately becomes analytic jointly in time and space, provided the initial surface satisfies a mild regularity assumption. The proof is based on a combination of a family of parameter-dependent diffeomorphisms, Lp-maximal regularity theory, and the implicit function theorem. (Received December 20, 2016)