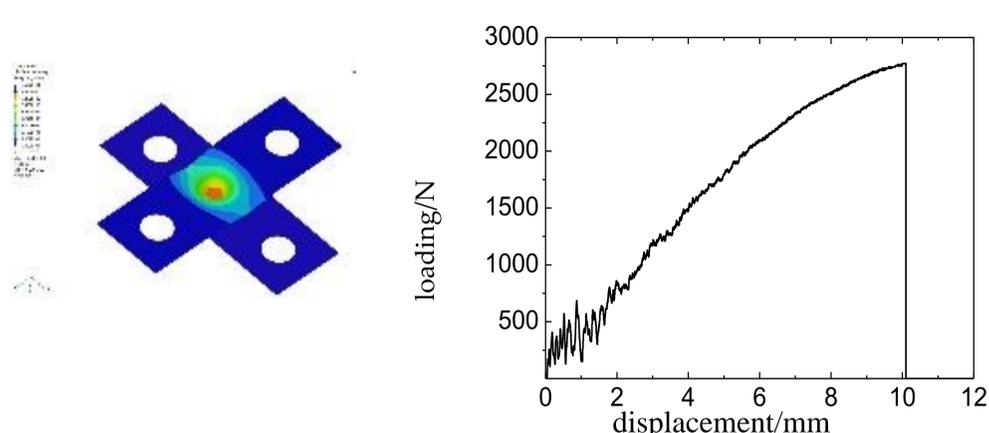
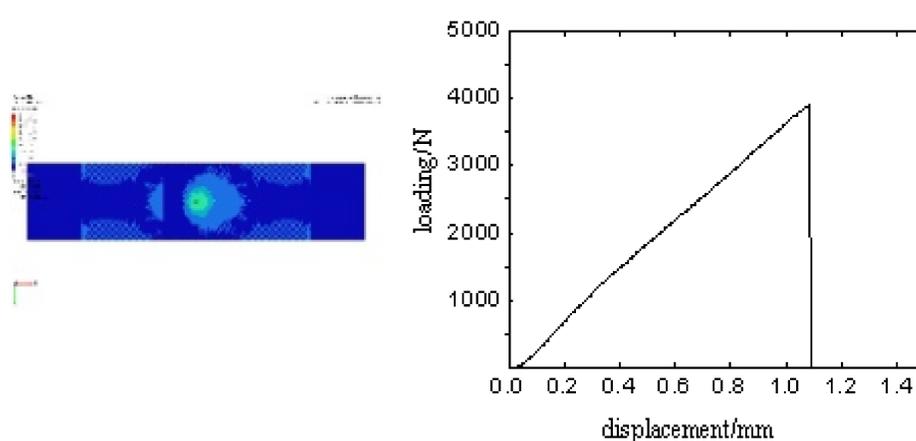


# Development of Resistance Spot Welding Material Card for Dissimilar Automobile Plates-revision

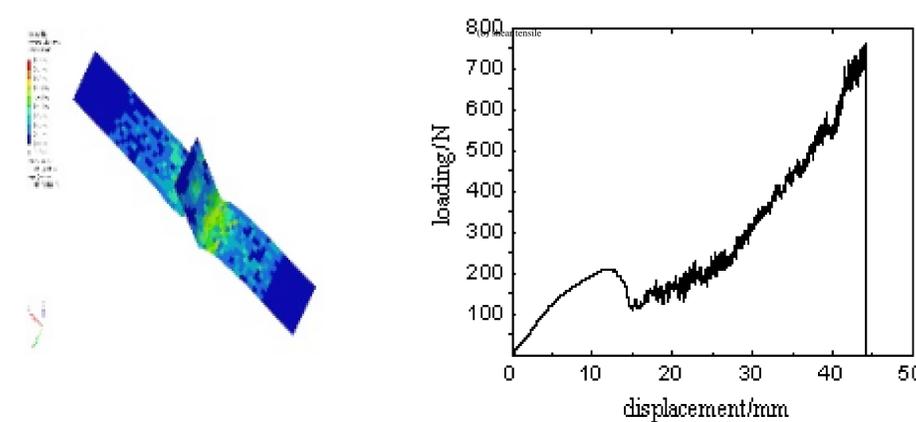
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(a) cross tensile



(b) shear tensile



(c) pull-out tensile

Load-Displacement curves of welding spots under different failure modes

Taking the resistance spot welding of auto steel DC04-HC420LA as an example, both the high-speed tensile performance curves of these two materials and the resistance spot welding process window of DC04-HC420LA were obtained.

The average maximum failure force of cross tensile test of resistance spot welding of the two materials was 2809N, the maximum failure force of shear tensile of 3913N, and the maximum failure force of pull-out tensile was 783N.

In Dyna \*MAT#100, the pull-out force, shear force, torque, bending moment and torque for welding nugget failure were defined. When the nugget resultant force exceeded the envelope surface defined by the criterion, welding spot failure occurred. Under each failure condition, the deviation between simulation result and test result was far less than 5%, which verified the reliability of the fracture failure model of resistance spot welding and the accuracy of the welding card of dissimilar materials, and it can help improve the accuracy of CAE collision analysis.