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Convergence Analysis for the Nested Refinement of Triangular Finite Element
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Application of Quaternary Aminated β-Cyclodextrin Ionic Liquid Stationary Phase in Capillary Gas Chromatography
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Development of a STEP-NC Controller for 5-Axis Machining of NURBS Surfaces
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Weibull-Distribution-Based Method of Bayesian Reliability Evaluation for Machining Center
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Cause Analysis about Buildup Formation of Carbon Sleeve in Continuous Annealing Furnace for Silicon Steel
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Study of the Realization and Application of Bio-Impedance Technology
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The Effects of Tuning Controller Gains for Servo Feed Unit Positioning Accuracy
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Performance Analysis and Improvement Approach of HEV Extended Expansion Gasoline Engine
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