265c Automation in Pharmaceutical Process Research and Development

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"Automation in Pharmaceutical Process Research and Development"

Abstract:

This presentation will focus on the critical role laboratory automation played in developing the dynamic resolution route for the synthesis of the MMPI candidate BMS-275291 (structure previously disclosed). Virtually all of the steps in the synthesis of this drug candidate were discovered or optimized using laboratory automation techniques and / or equipment. In particular, the discovery of the dynamic resolution was analogous to finding "the needle in a haystack" since only 2 of ~400 experiments (all performed in one day!) showed any indication that this transformation was possible. Additionally, optimization of the dynamic resolution process, dipeptide coupling reaction and synthesis of the dipeptide were accomplished to a very high level of sophistication using statistically designed experimentation techniques. Additional information will be shown to prove that this process could be performed on pilot-scale maintaining both quality and yield demonstrated in the laboratory. Relative raw material costs (% values only) will be discussed illustrating the cost reductions achieved through this effort.