Organic Process Research & Development

Organic Process Research & Development **1997**, *1*, 393

Editorial

I recently attended a symposium on Automation in Chemical Development in the UK, which set me thinking about the way in which we select reagents and solvents and how we optimise processes. The approach that many companies use can be "hit and miss", and with the increasing pressure to develop chemical processes more quickly and to scale them to pilot plant in the shortest possible time, there is a danger that the best process may not be found.

Perhaps automation will help us to screen more reagents/solvents and to implement statistical methods of optimisation to assist with finding and validating the best process. This promises to revolutionise the way we work, building on the advances in automated equipment that have been developed for combinatorial chemistry. The equipment available is still evolving, with suppliers eager to discuss with chemists their needs, and partnerships have arisen between companies funding the development of new approaches.

However, it is clear that automation can only be used for some types of processes at present—those involving dosing of gases and solids are an obvious area of difficulty. One company estimated that their robot could only handle 50% of reactions, but with suitable modification this may increase to over 80%.

Some chemists may be worried that, once organic chemistry can be automated, reactions sampled and analysed, and a feedback loop incorporated to use those results to calculate the reaction conditions for the next process (i.e., an automated self-directed optimisation or samplex approach), the jobs of chemists will be in danger. I doubt it—one may have said the same about autosamplers on analytical equipment! We should embrace the new technology with enthusiasm and let it help to increase our productivity and enable chemists to choose reagents and reaction conditions by a more rational approach than previously. Better processes should result.

Organic Process Research & Development welcomes articles concerning the development of new equipment targeted towards process R&D and would like to hear from chemists using automated methods in chemical development. Watch this space!

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