Title: Pharmaceutical Processing in the 21st Century: Seeing What Others have Seen and Thinking What No One has Thought

Abstract: Access to global public healthcare is impacted by many technical, economic, and social factors. It is widely recognized that the resources required to deliver and improve global public health are currently constrained. A powerful way to increase access is to lower the cost of products and services that have already proven to be effective. Currently, the cost of producing a wide range of pharmaceutical products is higher than it needs to be. The mission of Medicines for All (M4All) is to transform active pharmaceutical ingredient (API) processes in order to reduce medication cost and improve patient access. To fulfil this objective, M4ALL has developed a set of core principles for API process development, which are derived from fundamental elements of process intensification. These principals are commonly known but often neglected. We have applied these principles to the preparation of several global health drugs yielding dramatic improvements in chemical efficiency. The development of novel and highly efficient heterogeneous catalysts for cross-coupling reactions that support this effort will also be presented.