

Herb Sawin and DuPont: 25 Years of Cooperative Research and Development

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In the early 1980's, Herb Sawin and DuPont began a joint research program which, although never involving more than single-year commitments, nevertheless endured on a continuous basis for twenty-five years. There were both many scientific discoveries during the course of this work, as well as insights into the nature and workings of industrial-academic collaborations.

In this presentation, I will blend these two program components, by proposing five guidelines for effective collaboration, and using illustrations from the program's results to show their application. These guidelines are:

1. *Start from where you are.* While there may or may not be tightly specified goals at the beginning of such a collaboration, each team brings specific areas of expertise and insight to the relationship. By carefully examining the partners' skills, new and unexpected areas for collaboration may develop.
2. *Lead the science in emerging areas.* Early results can draw external contacts and input on new areas for fruitful work. The parties' standing can be enhanced by using these insights to produce results of particular interest to the industrial and academic communities exploring the technology.
3. *Understand and manage differing organizational priorities.* Corporations like to make money, and universities like to publish! While these orientations may lead to short-term disconnects, proper management can ensure that they will be harmonized within the overall program goals.
4. *On occasion, stretch towards the improbable.* High risk R&D offers the potential for high reward for the industrial partner, and unique science for the academic one. So, along with work expected with good confidence to lead to useful outcomes, some part of the program should be directed towards lower confidence but potentially game-changing directions.
5. *Put important empirical processes on a sound scientific footing.* It is not uncommon in the semiconductor industry for important processes to be highly optimized, but little understood. By developing good science around the process knowledge, new insights of both scientific and commercial value may result.