**Curriculum requirements for Dutch chemistry academics from an industry perspective**

The Dutch chemistry academic of today, adopting for a career in the chemical/ process industry, finds himself in a much more vigorous environment after his studies than 10-20 years ago.

Since a few years, the European chemical industry is facing heavy global competition from other chemical production regions that benefit from cheap shale gas (U.S.) and/ or lower work force costs (China). In order to increase labour productivity, new digital “4.0” technologies need to be implemented to keep the European chemical industry “smart” and competitive. Aging production assets put an additional challenge on keeping production processes safe and secure for people and environment.

Next to optimization and upgrading of current “fossil fuel based” production facilities the need for transition towards a circular economy is becoming more and more evident every day. Both from an energy-resource depletion perspective as well as from a climate-pollution perspective it is clear that new technologies and new molecules are needed to sustainably meet the needs of a strongly growing population with respect to food, energy, medicines and materials. For this, the chemical industry has a major role to play. Development and scale-up of new technologies such as bio-based, electrification and recycling are needed to replace the current production systems in the next few decades and to meet European targets (e.g. 80-95% reduction of CO2 emission) in 2050.

Based upon the above it can be concluded that many challenges lay ahead where academics in Applied Sciences, Chemistry and/or Chemical Engineering are to play an essential role. With respect to the curriculum requirements for academics, adopting for a career in the chemical/ process industry the following can be said:

1. knowledge and demonstrated skills in “pure” academic, chemistry disciplines remain important, however, knowledge and skills in the area of application of new digital technologies should become a clear(er) part of the education as well.
2. More attention should be given to training of “21st century skills”. The modern chemistry academic is not only skilled in the art of science, as “T-shaped” professional he/she is also a “connecting pin” between chemistry and other disciplines, facilitating rapid product- and process development activities. Training “*speed-of-innovation*” should be a clear element of the education, through “challenges”, boot camps and a like, in multidisciplinary settings where available information is limited and competences such as team work, flexibility, initiative, entrepreneurship and business planning are trained.
3. Direct experiences of students with industry should be intensified.

- A “major” (instead of minor) traineeship or internship should be a made possible

- More attention should be given to (the leadership aspects of) safety, health and environment in industrial working places.

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