

## From Science to Techno-science: The Formation of the Disciplinary Identity of Chemistry in the 19th Century

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### **Abstract**

The 19th century is widely considered the most important period of modern discipline formation. The establishment of research universities and the upgrading of the philosophical faculties – on par with the faculties of theology, medicine, and law – provided an important social context in which the identities of the main scientific disciplines were shaped still for much of the 20th-century. In this paper I analyze four factors that contributed to the formation of the disciplinary identity of chemistry, focused on synthetic organic chemistry and oriented toward what we today would call technoscience. The first one is chemistry's disciplinary academic origin in the faculties of medicine that continued to be influential during the 19th century, although chemistry departments moved to or were newly established in the philosophical faculties. I argue that the traditional link to medicine enabled the rapid growth of what soon came to be known as organic chemistry. The second factor is the parallel formation of other disciplines from which chemistry needed to distinguish itself and among which I will particularly look at the formation of modern physics. I argue that the discipline of modern physics emerged quite late both by assuming specific research fields that previously belonged to other disciplines, including mathematics and chemistry, and by assuming the role of being fundamental to all the other sciences, both of which had a profound impact on the research questions at the core of the disciplinary identity of chemistry. As a third factor I consider internal developments of chemistry from the late 18th to the mid-19th century. Against the background of the classical methodological pair of analysis and synthesis, I argue that the early emphasis on analysis turned into a strong emphasis of synthesis. All three factors shaped the disciplinary identity of chemistry in such a way that synthetic organic chemistry became

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the lead area in the second half of the 19th-century, which was eventually reinforced by a fourth factor, the emergence of the dye-stuff and pharmaceutical industries. I conclude with some remarks on how this still influential disciplinary profile has contributed to the public image of chemistry, its scientific status, and remoteness from philosophy.