Synthesis of Novel Proline derived Squaraines for Applications in Optoelectronic Devices

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Chiral aggregates are still in demand today as materials for optoelectronic components in the field of sensor technology. Squaraine molecules, in particular, hold considerable interest in this regard. Aggregates of homochiral proline-based squaraines (ProSQ's) have been shown to have a particularly strong CD effect.[1] Moreover, aggregation can be influenced by many factors, especially the functionalities of the molecules play a major role in influencing intermolecular packing effects. Introducing aryl units to modify the ProSQ's could facilitate improved aggregation by enhancing π-π stacking interactions. This, in turn, has the potential to amplify the CD effect.

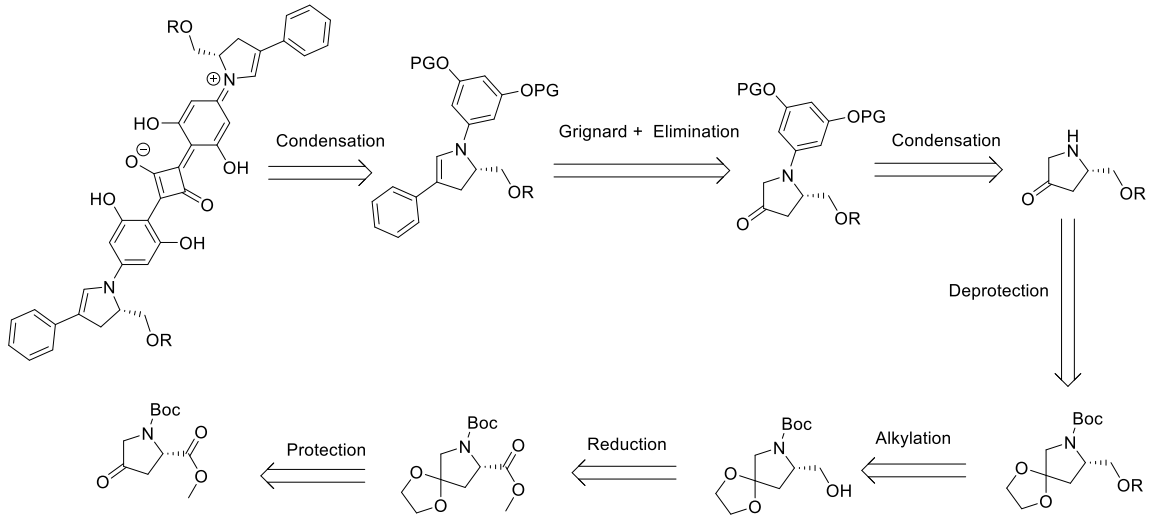

Figure 1: Retrosynthetic approach of a new proline-derived Squaraine.

A new idea on how to obtain aryl-substituted proline derivatives is shown in Fig. 1, with the key step of a Grignard reaction. With this sequence in particular, there is potential for accessibility to various other derivatives via different Grignard reactions.

References:

[1] M. Schulz, J. Zablocki, O. S. Abdullaeva, S. Brück, F. Balzer, A. Lützen, O. Arteaga, M. Schiek, *Nature communications* **2018**, *9*, 2413.