

**Supervisor Expression of Interest MSCA-IF Marie Skłodowska Curie Action-Individual Fellowship 2020**

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<b>Research Topic:</b>	Gold(I)-catalyzed activation of acetylene gas
<b>Brief description of the research project idea:</b>	
<p><b>Gold(I)-catalyzed activation of acetylene gas</b></p> <p>Recently, our group reported the selective synthesis of the <i>Z,Z</i>-1,4-disubstituted 1,3-butadienes by reaction of acetylene gas with <i>trans</i>-1,2-substituted alkenes (<a href="#">Angew. Chem. Int. Ed. 2020, 59, 4888</a>).</p> <p>Remarkably, in the presence of excess acetylene, the initially formed 1,3-butadienes react further by a new type of <i>intermolecular cross-metathesis</i> forming conjugated polyenes capped with two aryl rings.</p> <p><i>Based on the preliminary results on this novel oligomerization, the first objective of this project is to develop a high-yielding gold(I)-catalyzed polymerization of acetylene gas in the presence of a variety of alkenes under simple experimental conditions (room temperature, 1 atm) using new catalysts bearing sterically hindered ligands.</i></p> <p>On the other hand, reaction of acetylene with 1,5-dienes leads to tricyclo[5.1.0.0]octanes as single stereoisomers, which has been applied for the total synthesis of the natural product waitziacuminone in a single step from commercially available products.</p> <p>Encouraged by this noteworthy result, <i>a second objective of this project is to design chiral catalysts for the enantioselective activation of acetylene to build up complex chiral structures.</i></p>	