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**Interface Research and Catalysis**

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Erlangen, December 22, 2021

Topics in Catalysis

Prof. Dr. G. Rupprechter

Prof. Dr. Z. Dohnalek

Dr. A.F. Volpe

**Manuscript Submission:**

**“Thermal stability and CO permeability of [C4C1Pyr][NTf2]/Pd(111) model SCILLs: From UHV to ambient pressure ”**

**by Roman Eschenbacher, Simon Trzeciak, Christian Schuschke, Simon Schötz, Chantal Hohner, Dominik Blaumeiser, Dirk Zahn, Tanja Retzer and Jörg Libuda**

Dear Editors,

Hereby, we would like to submit the enclosed manuscript to be considered for publication in the Special Issue of Topics in Catalysis.

In recent years, ionic liquids (ILs) have attracted great interest in heterogeneous catalysis, in particular for their application as catalytic modifiers which improve the selectivity. Here, a very successful concept is the so-called supported catalyst with ionic liquid layer (SCILL). In this approach, an ionic liquid layer modifies the properties of a supported noble metal catalyst.

To design and further improve SCILLs, we need to understand the interaction between the ILs, reactants, and the metal surface at the molecular level. In this work, we investigated the interactions of co-adsorbed CO and ILs on Pd(111) and tested the dynamic ad/desorption of CO. To this aim, we combined experiments in ultrahigh vacuum with molecular dynamics simulations. Most importantly, we show that IL multilayers can be penetrated by CO only after partial dewetting to a wetting IL monolayer and IL droplets.

We believe that our manuscript provides insights that are highly relevant for both fundamental under­standing of IL interfaces and the related applications in heterogeneous catalysis. Thus, the work should be of great interest for the readers of Topics in Catalysis.

Sincerely yours,

Roman Eschenbacher and Jörg Libuda