

**MIT Chemical Engineering Department**  
**Fall 2020 Seminar Series**

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# New Results on the Electrochemical Double Layer and Its Effect on Electrocatalysis



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**10:00 am**

<https://mit.zoom.us/j/94430990447>

**Abstract:** In this talk, I will present some new results on the structure of the electrochemical double layer of platinum and gold single crystal electrodes. I will show that the Gouy-Chapman-Stern theory cannot explain the double layer capacitance of these interfaces, not even at low electrolyte concentrations. Based on these observations, I will suggest a new model for the electrochemical double layer. I will then discuss how this double-layer structure, or more specifically cations in the electrochemical double layer, may affect the kinetics of electrocatalytic CO<sub>2</sub> reduction, both the activity itself and the competition with hydrogen evolution.