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**Catalysis Club of Philadelphia**

Thursday, January 28<sup>th</sup>, 2016

DoubleTree Hotel

4727 Concord Pike Wilmington, DE 19803

**CO<sub>2</sub> Conversion via Catalysis and Electrocatalysis**

Jingguang Chen

*Thayer Lindsley Professor of Chemical Engineering*

*Columbia University, New York, NY*

**Social Hour: 5:30 PM**

**Dinner: 6:30 PM**

**Meeting: 7:30 PM**

**Members: \$35.00**

**Walk Ins & Non-members: \$40.00**

**Student & Retired Members: \$20.00**

***Menu\****

**Braised Chicken Quarter** – (plum tomatoes, cilantro, green chiles, chimichurri rice and roasted baby zucchini);

**Sesame Crusted Salmon** – (cauliflower and potato wasabi puree, steamed edamame, and a teriyaki drizzle);

**Veg Filo Triangle** – (roasted vegetables wrapped in filo dough);

*\*All dinners served with a sesame ginger salad (baby spinach, sesame seeds, edamame, shredded carrots, and ginger vinaigrette), rolls and butter, chef's choice of desserts, coffee, tea, iced tea, decaf, and water.*

**Meal reservations** - Please notify your company representative or Alex Mironenko ([alexmir@udel.edu](mailto:alexmir@udel.edu)) by **Thursday, January 21<sup>st</sup>**, or register online: <http://catalysisclubphilly.org/program/meeting-registration/>

**Membership** - Dues for the 2015-16 season will be \$25.00 (\$5.00 for the local chapter and \$20.00 for the national club). Dues for students, post-docs and retirees will be \$10.00 (\$5.00 for local club and \$5.00 for national club).

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### CO<sub>2</sub> Conversion via Catalysis and Electrocatalysis



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Ocean acidification and climate change are expected to be two of the most difficult scientific challenges of the 21<sup>st</sup> century. Converting CO<sub>2</sub> into valuable chemicals and fuels is one of the most practical routes for reducing CO<sub>2</sub> emissions while fossil fuels continue to dominate the energy sector. The catalytic reduction of CO<sub>2</sub> by H<sub>2</sub> can lead to the formation of three types of products: CO through the reverse water-gas shift (RWGS) reaction, methanol via selective hydrogenation, and hydrocarbons through combination of CO<sub>2</sub> reduction with Fischer-Tropsch (FT) reactions. In the current talk we will discuss some of our recent results in CO<sub>2</sub> conversion via both heterogeneous catalysis and electrocatalysis. Our research approaches involve the combination of DFT calculations and surface science studies over single crystal surfaces, evaluations over supported catalysts, and in-situ characterization under reaction conditions. We will also discuss challenges and opportunities in this important research field.

#### **Speaker Bio:**

Jingguang Chen is the Thayer Lindsley Professor of chemical engineering at Columbia University. He received his PhD degree from the University of Pittsburgh and then carried out his Humboldt postdoctoral research in Germany. After spending several

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years as a staff scientist at Exxon Corporate Research he started his academic career at the University of Delaware in 1998, and then took the roles as the director of the Center for Catalytic Science and Technology and the Claire LeClaire Professor of chemical engineering. He moved to Columbia University in 2012. He is the co-author of 20 US patents and over 300 journal articles with over 12,000 citations. He received many awards, including the awards from the catalysis clubs of Philadelphia (2004), New York (2008), Chicago (2011) and Michigan (2015). He recently won the 2015 George Olah award from the American Chemical Society.

