

Based on the talk by Dr. Abigail Doyle from University of California, LA, in 2022 Chem-Reaxys Academic Week by huaxuejia.cn

Track 1

I wanted to tell you a little bit about our work in the area of nickel photoredox catalysis.

This is an area that we became interested in now, um, about eight years ago **on the idea of** combining nickel catalysis with photoredox catalysis **in order to enable** new cross coupling reactions, **particularly** for SP³ carbon-carbon bond formation, and with the idea that **we might be able to** use feed stock chemicals **as opposed to** the more common organometallic reagents, organo-halides, uh, used in, uh, traditional cross coupling.

Track 2

Since 2014 this is an area that has expanded dramatically **based off** of amazing contributions from many researchers. And **what I think is interesting is** the majority of these **take advantage of** a single elementary step and mechanism for using visible light to enable this chemistry. And this mechanism **is known as** photo-induced electron transfer. **It's not** the exclusive mechanism that's used, **but it's** the most common. And so **in this case**, we use a photo sensitizer to absorb visible light and it transforms into a potent reductant or oxidant that can either generate open shell species from a substrate through oxidation or reduction, and then radical species will interface with nickel in cross coupling or you do photo induced electron transfer on the nickel catalyst itself to modulate its oxidation state. And in some cases you're doing both of these and these together, right, **enable many useful applications from** a single mechanism.

1. This is ... that

This the main reason that made us choose this direction.

This is the best solution that we've been able to come up with.

2. We might be able to...as opposed to...

We might be able to make it ourselves as opposed to ordering from a vendor.

We might be able to ask the HR department for help as opposed to doing it ourselves.

3. It's not..., but it's...

It's not the most efficient solution but it is the cheapest one.

Creating it in-house is not the only way we can deal with this situation, but at the moment it seems to be the least time-consuming one.

4. In this case...

In this case, we will just have to let the client decide.

In this case, I think we can assign the task to any of our team-leaders. They are all very competent.