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Pyrones to Aromatics. Sustainable Routes to Chemicals

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Identifying scalable, sustainable pathways to chemicals is a key goal. The NSF-funded Center for biorenewable Chemicals is focused on the interplay between biocatalysis and chemical catalysis. One of the key research thrusts is the production of pyrones from glucose and the conversion of these pyrones into both existing chemicals (drop-in chemicals) and new chemicals with improved functionality. Triacetic acid lactone and coumalic acid are two pyrones that have been extensively studied in this Center, both from their production from glucose and from their emergence as platform chemicals for the production of new compounds. Triacetic acid lactone has been converted into alkylated and acylated derivatives. One of the acylated derivatives, pogostone, has antifungal and insecticidal activity. Significantly, certain analogs of pogostone have much better biological activity. Coumalic acid has been converted into a variety of aromatic acids, some of which function as preservatives, plasticizers or antimicrobials.

Biography:

Dr. George Kraus received a B.S. degree in chemistry from the University of Rochester in 1972 and a Ph.D. degree in chemistry from Columbia University in 1976. He went to Iowa State University where he is now a University Professor of Chemistry. Dr. Kraus has authored over 320 publications. He became an AAAS Fellow in 2009 and was elected as a Fellow of the Royal Society of Chemistry in 2013. His research interests include the development of green chemistry methods and the chemistry of bio based products. He is active in the NSF Engineering Research Center for Bio renewable Chemicals.