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Concluding Remarks

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Concluding remarks

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Organometallic chemistry is now firmly entrenched in the methodology of organic synthesis. That this is so has been clearly demonstrated during the course of this meeting. Two themes have emerged. First, the power of organometallic reagents to provide enhanced selectivity in stoichiometric processes. In this area the use of carbene complexes, transition metal acyls, π-allyls and arenes are already offering powerful new methods for the synthesis of a wide range of functionalized compounds with very high diastereo- and enantioselectivities. Many of the methods described are already efficient and routine. Intramolecular cycloadditions of eneynes, catalysed by palladium, now represent short routes to polycyclic systems of some complexity. Even in the field of selective protection organometallics offer advantages, for example in the case of reactive acetylenes.

The second emerging theme lies in the field of catalysis and here, in the last decade, enormous advances have been made both in oxidation (epoxidation) and in reduction (hydrogenation). These processes with chiral ligands in the catalysts now routinely give enantiospecificities comparable to enymatic processes. They will surely revolutionize much of basic synthetic starting-material production. On the horizon can be glimpsed the possibility inherent in catalytic and enantioselective cross couplings, which holds immense promise as a synthetic method.

Overall, organometallic chemistry continues to invade the field of organic synthesis and holds out even greater promises for the next decade.