In 2008 AMT released a range of HOMSi® reagents developed by Professor Hiyama, Assistant Professor Nakao and co-workers.\(^1\textendash}^9\) We have grown this range to over 80 products over the past three years.

A selection of HOMSi® reagents are shown below:

Silicon substituted HOMSi ((2-hydroxymethylphenyl)dimethylsilanes) reagents are excellent cross-coupling partners which can provide the desired coupled products under mild conditions and in high yields.\(^2\)

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\text{HOMSi} = \begin{array}{c}
\text{Si} \\
\text{OH}
\end{array}
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\text{HO} \\
\text{Si} \\
\text{OH}
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\text{OH} \\
\text{Si} \\
\text{Cl}
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\text{OH} \\
\text{Si} \\
\text{CN}
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\text{OH} \\
\text{Si} \\
\text{H}
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Recently HOMSi\textsuperscript{®} reagents have been shown to cross couple with aryl imidazol-1-ylsulfonates which are alternative cross coupling partners to aryl halides. It is interesting to note that no copper iodide was required using these reagents.\textsuperscript{10}

The cross-coupling reactions using HOMSi\textsuperscript{®} reagents have the following characteristics:

1. High functional group compatibility (amino, cyano, hydroxy, ester, ketone, nitro etc.)
2. React with a variety of halide coupling partners including iodides, bromides and chlorides
3. A relatively mild base such as potassium carbonate is generally used
4. Can be performed under fluoride-free conditions
5. Mild reaction conditions (RT to 75 °C)
6. Organosilicon “by-product” can be recycled if required
7. The cross-coupling reactions can be turned “OFF” by the use of suitable protecting groups on the 2-hydroxymethyl group\textsuperscript{6}

Another key advantage of the HOMSi reagents is that the cross-coupling reactions can be conducted in the presence of pinacol esters of aryl boronates as shown below.

The HOMSi\textsuperscript{®} reagents have been reported to undergo a number of other organic transformations.\textsuperscript{5,7,8}
The phosphine ligands that have been reported to work well in the cross coupling reactions include N-[2-(Diphenylphosphino)benzylidene] cyclohexylamine\textsuperscript{1-4,6,7} and tri(o-tolyl)phosphine\textsuperscript{11,12}. Both phosphines are available commercially from various suppliers.

N-[2-(Diphenylphosphino)benzylidene] cyclohexylamine \hspace{1cm} \text{tri(o-Tolyl)phosphine}

References
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For a full listing of reagents for Hiyama cross-couplings, visit \url{www.amtechpl.com}.