A new tool “nugget” from FOCUS:

**Coherent Control of Chemical Reactions**

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Shaped optical pulses and genetic learning algorithms have been used to study ways to optimize chemical reactions, molecular excitations, and optical pumping of electron and nuclear spins in liquids. The genetic algorithms use an evolutionary scheme to efficient search for optical pulse shapes that can optimize the desired dynamics in the molecules. We have combined the results of these studies with quantum intramolecular dynamics calculations to try to learn more about the motion of electrons that lead to specific reaction pathways. The figure shows some early results from experiments to optimize the ring-opening reaction in cyclohexadiene.