Michael addition frequently is used as a generic descriptor of 1,4- or conjugate addition, but in fact refers to specific 1,4-addition of an enolate anion to an ?,?-unsaturated carbonyl substrate, resulting in a 1,5-dione adduct. 231 Classical Michael additions are conducted in protic media; for tandem vicinal difunctionalization reaction

Organic Reactions provides a compilation of an authoritative summary of a preparatively useful organic reaction from the primary literature. Practitioners interested in executing such a reaction (or simply learning about the features, advantages, and limitations of this process) thus have a valuable resource to guide their experimentation.

Sep 12, 2020 · The Claisen condensation is a carbon- The base used must not interfere with the reaction by undergoing nucleophilic substitution or addition with a carbonyl carbon. For this reason, the conjugate sodium alkoxide base of the alcohol formed (e.g. sodium ethoxide if ethanol is formed) is often used, since the alkoxide is regenerated. In give the conjugate base, which is called an enolate. Typical bases used to form an enolate are hydroxide step parallels the addition of any nucleophile to a carbonyl compound (figure 3A). In the case of the ethanal enolate, once it is formed, it will react with a second molecule of ethanol present in Some aldol condensation reactions

Click chemistry is the 1,3-dipolar cycloaddition of an azide and alkyne to form 1,2,3-triazole, which has been applied for a wide range of applications due to its simple workup and purification steps, rapidly creating new products (Fig. 5.9) [96,97].Since the introduction of click chemistry into macromolecules and surface chemistry, it is expected to provide a useful strategy for uniform, ...

Three dumbell-shaped p orbitals shown as interactive 3D colour surfaces and slices for advanced school chemistry and undergraduates

Reaction Explorer is an interactive system for learning and practicing reactions, syntheses and mechanisms in organic chemistry, with advanced support for the automatic generation of random problems, curved-arrow mechanism diagrams, and
inquiry-based learning. Available below is just a sampling of the content available in the complete system.

So, the Michael reaction is a particular type of conjugate addition reaction that ?, ?-unsaturated carbonyl compounds undergo with nucleophiles. In general, ?, ?-unsaturated carbonyl compounds can undergo a 1,2- or 1,4-addition reaction. 1,2-addition reactions are all of those where the nucleophile attacks the carbonyl group. For example, the reaction of carbonyl compounds with ...

Feb 11, 2020 · The E1cB (Elimination, Unimolecular, Conjugate Base) mechanism is a third mechanistic pathway for elimination reactions. In many ways it is the exact opposite of the E1 mechanism, as the first step is deprotonation to form a carbanion, followed by elimination in ...

Chapter 19: Enols and Enolates of Carbonyl Compounds and Their Reactions We have seen that the carbonyl group of aldehydes and ketones is highly reactive, and that additions to this functionality are common. In the present chapter we will see that not only is the carbonyl functionality reactive per se, but that it also activates nearby carbon-hydrogen bonds ...

A boronic acid is a compound related to boric acid in which one of the three hydroxyl groups is replaced by an alkyl or aryl group. As a compound containing a carbon-boron bond, members of this class thus belong to the larger class of organoboranes. Boronic acids act as Lewis acids. Their unique feature is that they are capable of forming reversible covalent complexes with sugars, ...

The Claisen condensation is a carbon–carbon bond forming reaction that occurs between two esters or one ester and another carbonyl compound in the presence of a strong base, resulting in a ?-keto ester or a ?-diketone. It is named after Rainer Ludwig Claisen, who first published his work on the reaction in 1887.

Related Reactions Benzoin Condensation. Stetter Reaction. The Stetter Reaction is a 1,4-addition (conjugate addition) of an aldehyde to an a, ?-unsaturated compound, catalyzed by cyanide or a thiazolium salt. This reaction competes with the corresponding 1,2-addition, which is the Benzoin Condensation.

Jan 30, 2013 · Stereoselectivity In Alkene Addition Reactions: “Syn” vs “Anti” In the last post on alkene addition reactions, we discussed one of the two key themes to look for in addition reactions: regiochemistry (in other words – what is the favored direction in which the pi-bond breaks). This post is about the second key theme in addition reactions of alkenes: ...

8: ?, ?-Conjugate Addition Reaction (Michael Addition) #9: 1,2 vs 1,4 Addition Reactions to ?, ?-Conjugate Carbonyl Compounds #10: Claisen Condensation and Other Similar Reactions #11: The Robinson Annulation Reaction: Reactivity of Amine Compounds – Flashcard Format #1: Direct Alkylation of Amines #2: Reactions of Amines: Acylation

The Dieckmann condensation reaction involves the intramolecular reactions of two ester groups belonging to the same molecule. The reaction yields a beta-keto ester which has a cyclic structure. When an enolizable ester/ketone is used with a non-enolizable ester, the resulting reaction is known as the crossed Claisen condensation.
Chapter 23. Carbonyl Condensation Reactions

As a result of the large dipole of the carbonyl group: 1. The carbonyl carbon is electrophilic and is the site of addition reactions by nucleophiles; 2. The ?-protons are acidic and can be deprotonated by strong bases to give an enolate, which are nucleophiles and react with electrophiles. 

Jun 03, 2021 · Condensation Reactions. A condensation reaction is a reaction in which two molecules combine to form a single molecule. A small molecule, often water, is usually removed during a condensation reaction. Amino acids are important biological molecules that have an amine functional group on one end of the molecule and a carboxylic acid functional group on the other.

Conjugate Addition Reactions One of the largest and most diverse classes of reactions is composed of nucleophilic additions to a carbonyl group. Both reversible and irreversible addition reactions have been described, and in all cases the initial step involved covalent bonding of a nucleophile to the electrophilic carbon atom of the carbonyl group.

Conjugate addition reactions. 5. Alkylation of acetylide anions. 6. Wittig and other ylide reactions. 7. Alkylation of enolate anions. 8. Claisen and aldol condensations. With the exception of Friedel-Crafts alkylation, these reactions all give products having one or more functional groups at or adjacent to the bonding sites.

Basic Chemistry Vocabulary List • absolute temperature: This is a temperature reading made relative to absolute zero. We use the unit of Kelvins for these readings. • absolute zero: This is the lowest temperature possible. If you remember that temperature is a measurement of how much atoms move around in a solid,