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Novel Acylation of a Vinyl Group by the Reaction of an Aldehyde and a Vinylselenonium Ylide.

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Vinylselenonium ylide, which was generated from (*Z*)-vinylselenonium salt with a base such as sodium or potassium hydride, reacted with aromatic aldehydes to produce the α,β-unsaturated ketones, which were obtained in better yields from the aldehydes with an electron-withdrawing group than from those with an electron-donating group. Based on the results from reactions using (vinyl-*d*)selenonium salts on benz(aldehyde-*d*) the reaction mechanism was proposed.

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Self-assisted Tandem Michael-aldol Reactions of α, β-Unsaturated Ketones with Aldehydes.

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The tandem Michael-aldol reaction of 1-[2-(methylsulfanyl)phenyl]prop-2-en-1-one (**1**) or the seleno congener **4** with *p*-nitrobenzaldehyde in the presence of $BF_3 \cdot OEt_2$ gave the Baylis–Hillman adduct **2** or **5** and onium salt **3** or **6**, respectively, and selenochromanone **7** from **4**. When the reaction mixture of **1** or **4** with *p*-nitrobenzaldehyde was worked up with **2** equivalents of triethylamine, **2** (75%) or **5** (64%) together with **7** (10%) was obtained.

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Syntheses and Reactions of Cyclic *Se*-Alkoxy-*Se*-chloroselenuranes and Alkoxyselenonium Salts.

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Several 1-chloro-2,1-oxaselenole selenuranes, 5-chloro-5,11-epoxy-6,11-dihydrodibenzo[*b,e*]selenepines and the corresponding selenonium salts were synthesized and the differences in structures between the selenuranes and the selenonium were studied by ^{1}H-and ^{77}Se-NMR spectroscopy. Their reactions with organometallic reagents were conducted and the reaction mechanism was discussed.

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Novel Ring Transformation of Dihydroselenines to Selenabicyclo[3.1.0]hexenes.

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Treatment of 2-bromo-2,6-dicyano-2,3-dihydroselenine with triethylamine in ethanol gave 2-selenabicyclo[3.1.0]hex-3-ene (**1**) in 77% yield. Reaction of **1** with benzyne formed 2-cyanobenzoselenophene in 35% yield. Methylation of **1** with methyl triflate produced *Se*-methylselenonium salt (**2**), which was transformed into 2-selenabicyclo[3.1.0]hex-3-ene-1-carboxamide (**3**) and 3-carboxamide (**4**). Compound (**1**) was converted into cyanoethynylcyclopropane via selenonium salt (**2**).