Low–Temperature Exchange of Hydrogen and Deuterium between Molecular Ethanol and Water on Au(111)

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Highlights

- Temperature programmed desorption shows that the exchange of hydrogen and deuterium occurs below 200 K on Au(111).
- The exchange of hydrogen and deuterium between ethanol and water molecules occurs without the presence of a reactive surface species or reactive substrate.
- Isotopic studies show that the exchange occurs between both ethanol/deuterated water and ethanol–OD/water adsorbates on Au(111).
- The formation of ethanol/water hydrogen–bonded networks on Au(111) is expected to facilitate the concerted motion of hydrogen/deuterium atoms at low temperatures.