

Problem 97, Chemistry 301X - 2006

A single dibromide of unknown structure leads to a mixture of dienes when treated with  $\text{KOC}(\text{CH}_3)_3$  in *tert*-butyl alcohol. Treatment of the mixture of dienes with ozone, followed by dimethyl sulfide or  $\text{H}_2/\text{Pd}$  leads to butane-1,4-dial (**1**), hexane-1,6-dial (**2**), and pentane-1,5-dial (**3**). Provide a structure for the starting dibromide and the unknown dienes.

