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A Retro Diels–Alder Route to Diphosphorus Chemistry: Molecular Precursor Synthesis, Kinetics of P₂ Transfer to 1,3-Dienes, and Detection of P₂ by Molecular Beam Mass Spectrometry  

Pass the P₂

**Significance:** Cummins and co-workers have developed a novel system for thermally transferring the diphosphorus molecule P₂ from a transannular diphosphorus bisanthracene adduct 4 to various 1,3-dienes via a retro-Diels–Alder reaction.

**Comment:** Treatment of 4 with platinum ethylene complex [(C₂H₄)Pt(PPh₃)₂] at room temperature furnishes the expected platinum diphosphorus complex (P₂)[Pt(PPh₃)₂], broadening the scope of this P₂ precursor to inorganic complexes.

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**Trapping reactions:**

- **1,3-cyclohexadiene**
  - THF, heat
  - >90% yield (NMR)

- **1,3-cyclohexadiene**
  - n-hexane, heat
  - 69% yield

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**Key words**
- retro-Diels–Alder reaction
- phosphorus
- fused ring systems

**Category**
- Synthesis of Materials and Unnatural Products

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