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FORMATION OF RING SYSTEMS WITHIN SULFIMIDES AND THEIR METAL COMPLEXES

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FORMATION OF RING SYSTEMS WITHIN SULFIMIDES AND THEIR METAL COMPLEXES

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RESULTS AND DISCUSSION

There are a number of ways we have developed for the incorporation of sulfimide units into ring systems. Simple coordination of Ph_2SNH to a metal followed by hydrogen-bonding to anions and solvates can generate ring structures. Thus a honeycomb arrangement is seen in $[\text{Cu}(\text{Ph}_2\text{SNH})_2(\eta_2\text{-CO}_2)\cdot\text{H}_2\text{O}]$, thanks to interactions between the carbonate and sulfimide ligands and the waters.¹ Hydrogen bonding also plays a strong part in the three-fold topological variation noted for $[\text{Cu}_3(\text{Ph}_2\text{SNH})_6(\text{trimesate})_2]_x$ —crystallized in the presence of cyclohexane, pyridine, or water the resulting 48-membered ring units show hexagonal, brickwall or herringbone arrangements respectively. A key feature of two of these structures is the presence of a “framework inter-allogon” effect, allowing two different copper geometries (though with identical ligand sets and bonding modes) within the ring.²

Derivatization of Ph_2SNH is an effective route to ring systems; this can take place during the reaction. Thus metal-assisted addition of the sulfimide to a nitrile, which takes place in the presence of a platinum center (most effectively Pt(IV)), generates a hybrid sulfimide/nitrile. This may either be liberated or, upon reduction to Pt(II) , incorporated into a metallocycle.³ Derivatization of the sulfimide prior to reaction can be achieved either by adding other, nonsulfimide coordinating units to the structure or by generating *bis*-sulfimides.⁴ An example of the former ligand comes with **1a**, which can act as a bidentate N,S ligand (Figure 1).

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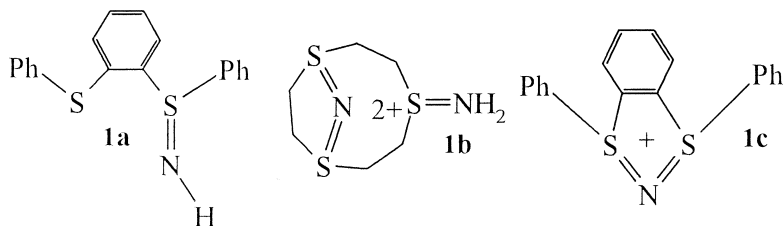


FIGURE 1 The structure of compounds **1a–c**.

Finally, reaction within metal-free sulfimide systems also can generate ring arrangements. Thus while treatment of [9-ane]S₃ with 3 equivalents of the aminating agent MSH results in the bridged crown **1b**,⁵ reaction of **1a** with *n*-bromosuccinamide leads to **1c** (Figure 1).⁶

REFERENCES

- [1] K. E. Holmes, P. F. Kelly, and M. R. J. Elsegood, *Cryst. Eng. Comm.*, 174 (2002).
- [2] K. E. Holmes, P. F. Kelly, and M. R. J. Elsegood (in prep).
- [3] A. V. Makarycheva-Mikhailova, N. A. Bokach, V. Yu. Kukushkin, et al., *Inorg. Chem.*, **42**, 301 (2003).
- [4] M. R. J. Elsegood, K. E. Holmes, P. F. Kelly, et al., *Eur. J. Inorg. Chem.*, 120 (2003).
- [5] M. R. J. Elsegood, L. M. Gilby, K. E. Holmes, and P. F. Kelly, *Can. J. Chem.*, **18**, 1410 (2002).
- [6] L. M. Gilby, M. R. J. Elsegood, K. E. Holmes, and P. F. Kelly, unpublished observations.