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THE PREPARATION, CHARACTERIZATION IN SOLUTION OF THE 7π RADICAL 1,2,4-TRISELENO-3,5-DIAZOLYLIUM, AND THE 6π 1,2,4-TRISELENO-3,5-DIAZOLIUM (2+) CATIONS, AND THE X-RAY CRYSTAL STRUCTURES OF $(\overline{SeNSeNSe})_2(AsF_6)_2$ AND $\overline{SeNSeNSe}(AsF_6)_2$ CONTAINING THE FIRST STABLE BINARY SELENIUM–NITROGEN SPECIES

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Numerous binary sulphur-nitrogen species have been prepared and structurally characterized. Analogous selenium-nitrogen compounds are restricted to Se_4N_4 which is even more thermodynamically and kinetically unstable than S_4N_4. As a result for a search for $SeNSe^+$ [cf. SNS^+, which has a very extensive chemistry [1]] we prepared $(\overline{SeNSeNSe})_2(AsF_6)_2$ and $\overline{SeNSeNSe}(AsF_6)_2$ by a variety of routes, containing the first reported thermally stable binary selenium nitrogen species including the indefinitely stable 7π radical cation $\overline{SeNSeNSe}^{+\cdot}$. These salts were fully characterized both in the solid state [X-ray], and in solution, $[\overline{SeNSeNSe}^{+\cdot}$, e.s.r.; $\overline{SeNSeNSe}^{2+}$, Raman, ^{14}N, ^{77}Se N.M.R.]. Interestingly $\overline{SeNSeNSe}^{2+}$ retains its ring structure in solution in contrast to $\overline{SNSNS}^{2+}$, in solid $S_3N_2(AsF_6)_2$, which dissociates to NS^+ and SNS^+ [2].

1 W.V.F. Brooks, N. Burford, J. Passmore, M.J. Schriver, and L.H. Sutcliffe, J.Chem.Soc., Chem. Commun., 69-71 (1987); E.G. Awere, N. Burford, C. Mailer, J. Passmore, M.J. Schriver, P.S. White, A.J. Banister, H. Oberhammer and L.H. Sutcliffe, J.Chem.Soc., Chem. Commun., 66-69 (1987) and references therein.

2 J. Passmore, M.J. Schriver, Inorg. Chem. 27, 2749-51 (1988).