New Macroyclic Polyamines Containing Two Dansylamidoethyl Side Arms

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Five new macrocyclic polyamine fluorophores containing two dansylamidoethyl side arms (3a-3e) have been prepared. As shown in Scheme 1, the appropriate macrocyclic polyamine (1a-1e) was treated with N-dansylaziridine in acetonitrile to form 3a-3e. The yields of the new fluorophores are given in the scheme.
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Scheme 1. Syntheses of Macrocyclic Polyamines Containing Two Dansylamidoethyl Side Arms

\[
\begin{align*}
1a & \quad 1b \\
1c & \quad 1d \quad n = 0 \\
1e & \quad n = 1
\end{align*}
\]

\[
\text{HN} + \text{Et}_2\text{O} \xrightarrow{\text{NaOH, H}_2\text{O}} \text{HN} \quad 1a-1e + 2 \quad 3a-3e
\]

3a-3b are the corresponding compounds where each H of 1a-1e has been replaced by the dansylamidoethyl group.

Yields and melting points of products 3a - 3e are as follows:
3a, 88%, 158-160°C; 3b, 91%, 194-195°C; 3c, 90%, 204-205°C; 3d 85%, 64-65°C; 3e, 82%, 60-61°C.