

Supplementary information

Three-Way junctions – Ruthenium complex Assemblies

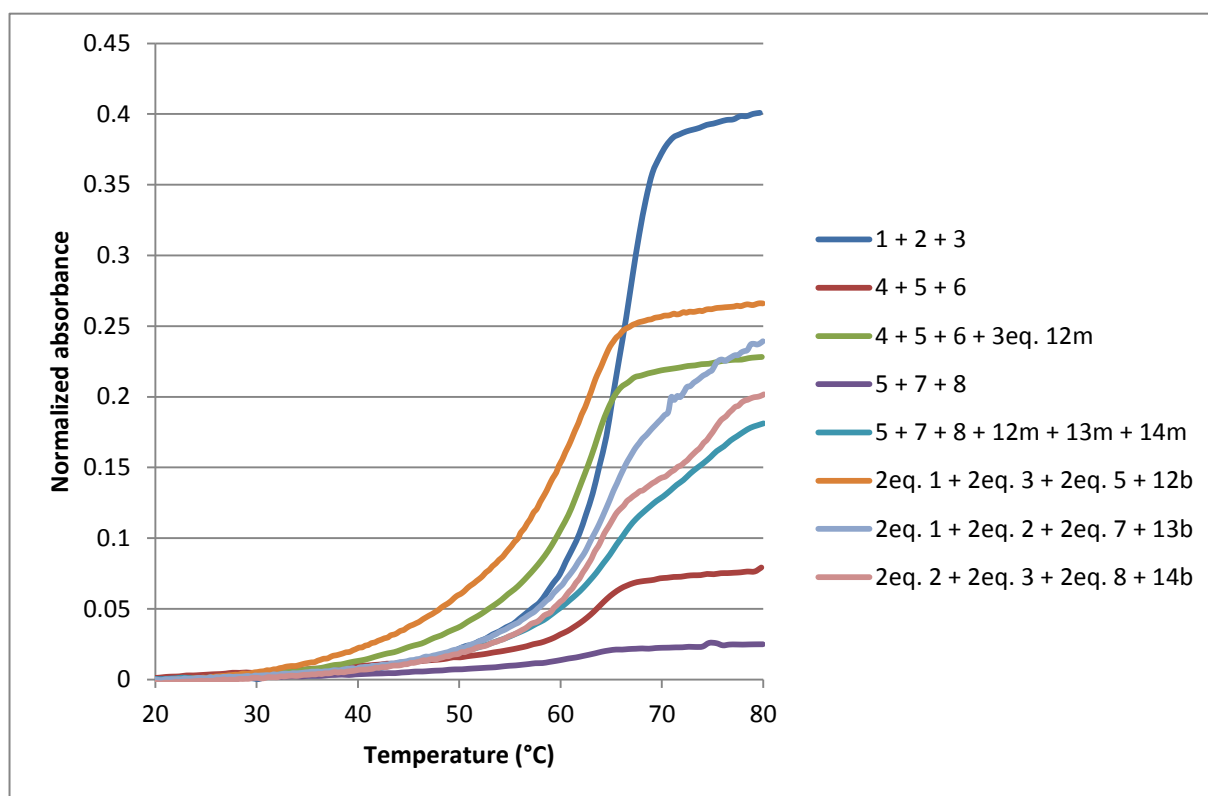
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Products

All ODNs were purchased at Eurogentech S.A. DNA/ruthenium complex hybrids were synthesized according to an already published procedure.^[1]

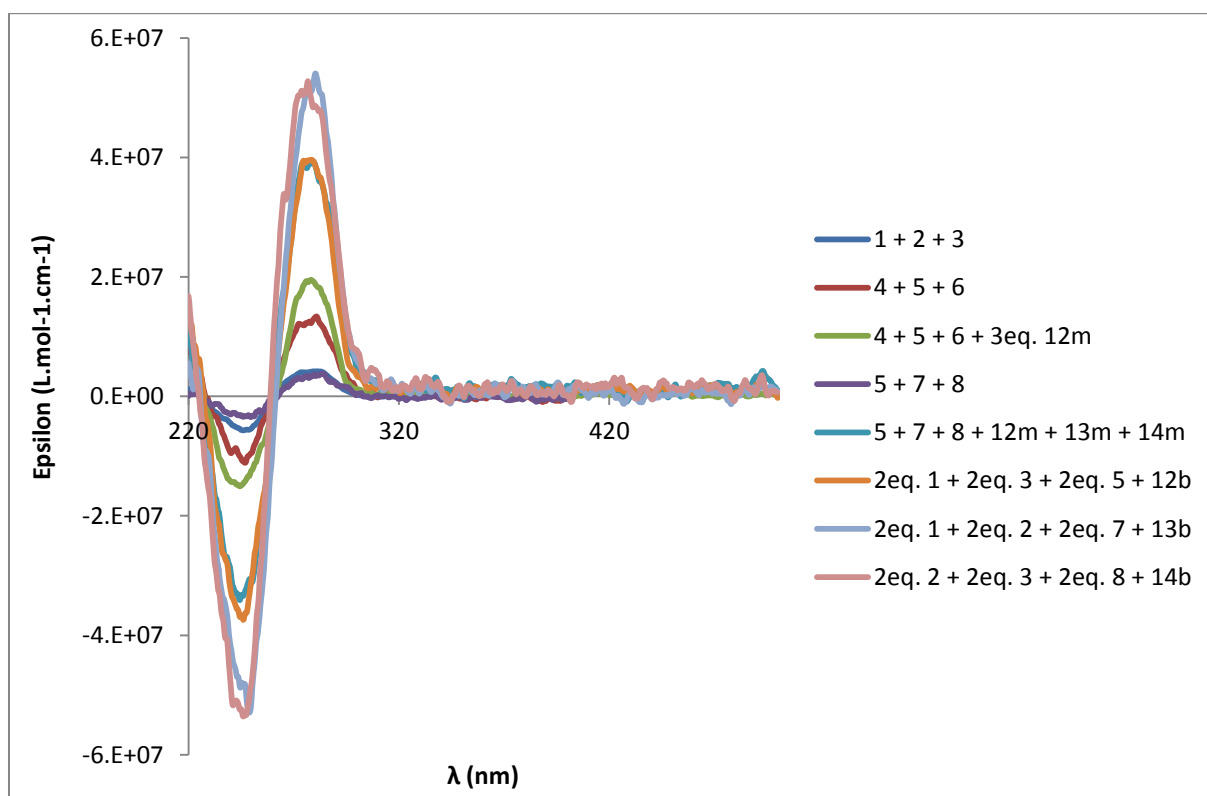
1. Spectral analyses:

1.1. Melting temperature curves

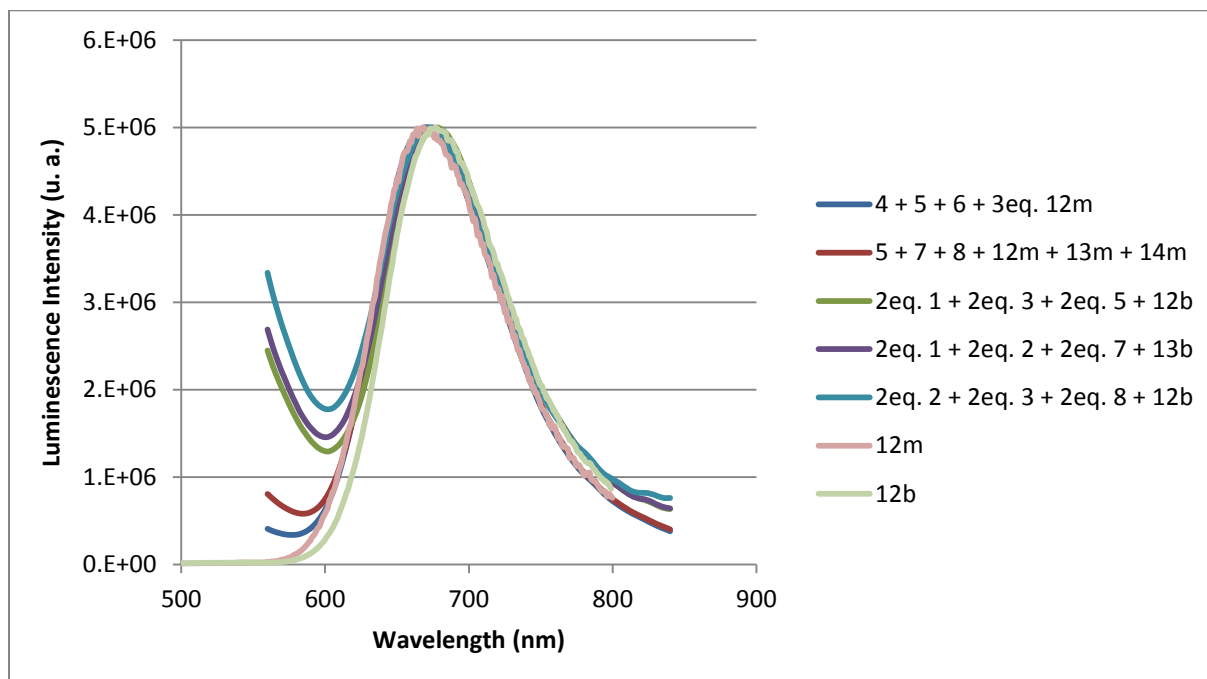


Assembly	T _{m1} (°C)	T _{m2} (°C)
1 + 2 + 3	67,1	N/A
4 + 5 + 6	61,9	N/A
4 + 5 + 6 + 3eq. 12m	63,4	N/A
5 + 7 + 8	62 ,8	N/A
5 + 7 + 8 + 12m + 13m + 14m	65,5	74,8
2eq. 1 + 2eq. 3 + 2eq. 5 + 12b	63,3	N/A
2eq. 1 + 2eq. 2 + 2eq. 7 + 13b	64,9	N/A
2eq. 2 + 2eq. 3 + 2eq. 8 + 14b	64,0	75,0

1.2. Circular dichroism



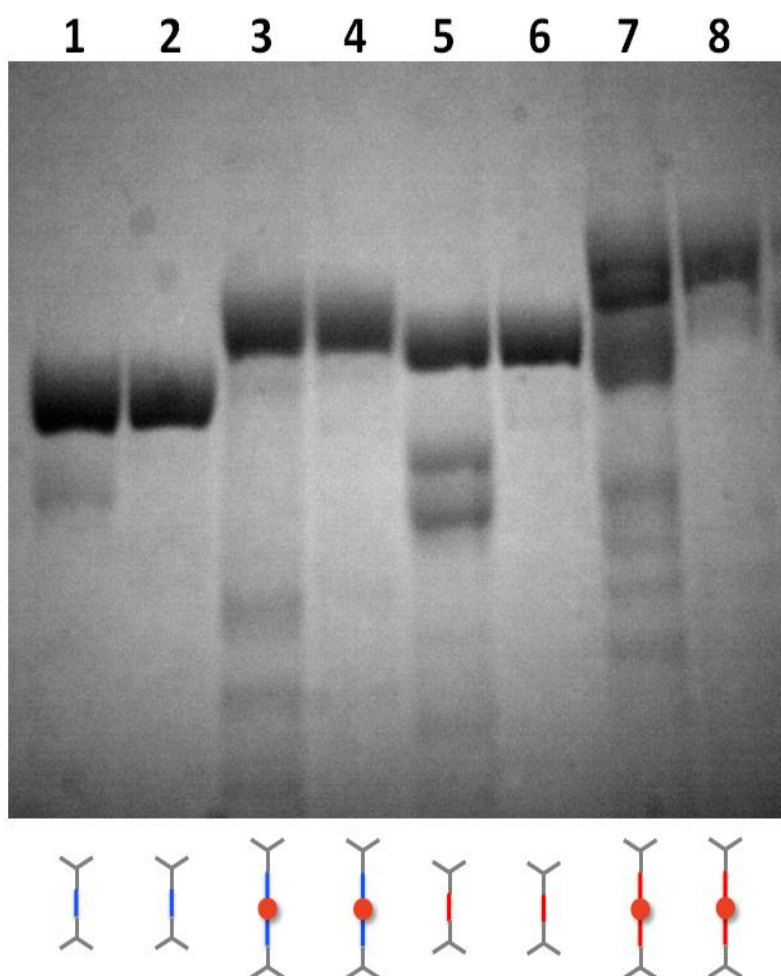
1.3. Luminescence emission



2. Polyacrylamide gel electrophoresis:

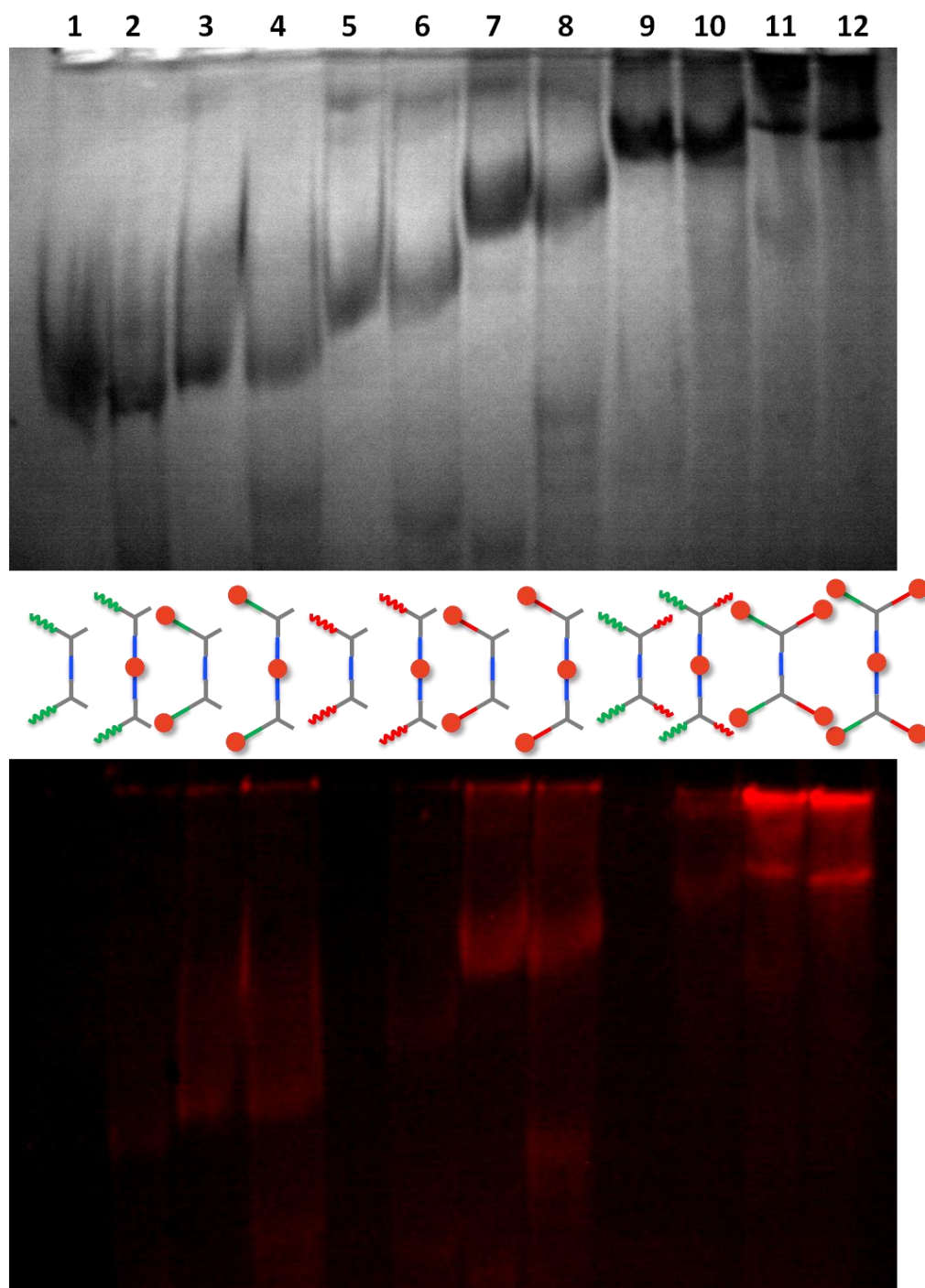
The formation of the assemblies was analysed by Polyacrylamide gel electrophoresis (PAGE). PAGE was carried on a Hoefer SE40-15-1.5 unit. The gels were synthesized with a crosslinking ratio of 19:1 acrylamide:bis-acrylamide. The gel size was 18 cm x 24 cm and it was run at 8°C, with a voltage of 170 V during 6 to 14 hours depending on the gel. The gels were revealed under UV-visible light at $\lambda = 254$ nm and with a Safe Imager™ 2.0 blue light transilluminator from Invitrogen.

a) Gel of double-stars before and after purification by PAGE



Native polyacrylamide gel (11 %) showing the hybridization of double-stars linked with or without ruthenium complexe/DNA hybrids at $\lambda = 254$ nm before and after purification. Lane 1: 2eq. **1** + 2eq. **3** + **5** + **9** **before purification**; lane 2: 2eq. **1** + 2eq. **3** + **5** + **9** **after purification**; lane 3: 2eq. **1** + 2eq. **3** + 2eq. **5** + **12b** **before purification**; lane 4: 2eq. **1** + 2eq. **3** + 2eq. **5** + **12b** **after purification**; lane 5: 2eq. **1** + 2eq. **2** + **7** + **10** **before purification**; lane 6: 2eq. **1** + 2eq. **2** + **7** + **10** **after purification**; lane 7: 2eq. **1** + 2eq. **2** + 2eq. **7** + **13b** **before purification**; lane 8: 2eq. **1** + 2eq. **2** + 2eq. **7** + **13b** **after purification**.

b) PAGE of various double-stars



Native polyacrylamide gel (10 %) showing the hybridization of double-stars linked with or without ruthenium complex/DNA hybrids and with or without ruthenium complexes on the peripheries at $\lambda = 254$ nm (up) and with a Safe Imager™ 2.0 blue light transilluminator (down). Lane 1: 2eq. **1** + 2eq. **7** + **9** + **5**; lane 2: 2eq. **1** + 2eq. **7** + 2eq. **5** + **12b**; lane 3: 2eq. **1** + 2eq. **7** + **9** + **5** + 2eq. **13m**; lane 4: 2eq. **1** + 2eq. **7** + 2eq. **5** + **12b** + 2eq. **13m**; lane 5: 2eq. **3** + 2eq. **8** + **9** + **5**; lane 6: 2eq. **3** + 2eq. **8** + 2eq. **5** + **12b**; lane 7: 2eq. **3** + 2eq. **8** + **9** + **5** + 2eq. **14m**; lane 8: 2eq. **3** + 2eq. **8** + 2eq. **5** + **12b** + 2eq. **14m**; lane 9: 2eq. **8** + 2eq. **7** + **9** + **5**; lane 10: 2eq. **8** + 2eq. **7** + 2eq. **5** + **12b**; lane 10: 2eq. **8** + 2eq. **7** + **9** + **5** + 2eq. **13m** + 2eq. **14m**; lane 12: 2eq. **8** + 2eq. **7** + 2eq. **5** + **12b** + 2eq. **13m** + 2eq. **14m**.

Reference:

- [1] J. Irvoas, A. Noirot, N. Chouini-Lalanne, O. Reynes, J.-C. Garrigues, V. Sartor, *RSC Advances*, 2012, **2**, 9538.