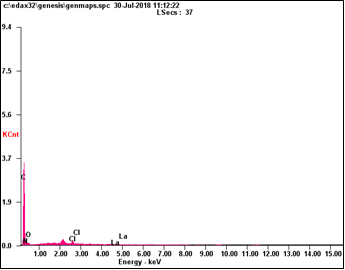
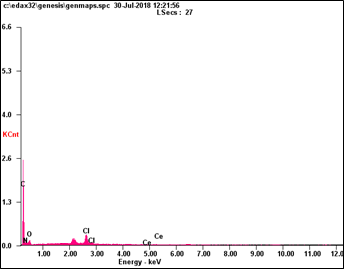
|  |  |  |
| --- | --- | --- |
| ***Element*** | ***Wt%*** | ***At%*** |
| ***CK*** | 79.20 | 82.33 |
| ***NK*** | 16.33 | 14.55 |
| ***OK*** | 03.76 | 02.93 |
| ***ClK*** | 00.47 | 00.16 |
| ***LaL*** | 00.25 | 00.02 |
| ***Matrix*** | Correction | ZAF |

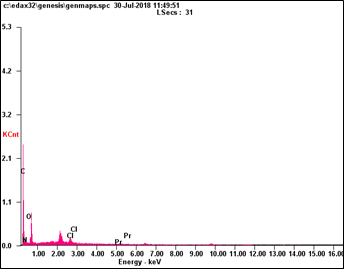


**Supplementary Information SI 1(a): EDX image of La-PIn**

|  |  |  |
| --- | --- | --- |
| ***Element*** | ***Wt%*** | ***At%*** |
| ***CK*** | 75.23 | 79.57 |
| ***NK*** | 14.64 | 13.27 |
| ***OK*** | 08.23 | 06.53 |
| ***ClK*** | 01.67 | 00.60 |
| ***CeL*** | 00.22 | 00.02 |
| ***Matrix*** | Correction | ZAF |



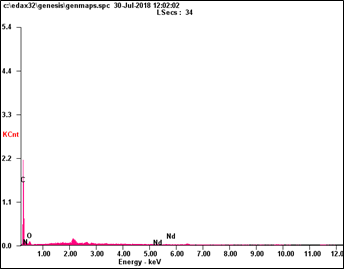
**Supplementary Information SI 1(b): EDX image of Ce-PIn**



|  |  |  |
| --- | --- | --- |
| ***Element*** | ***Wt%*** | ***At%*** |
| ***CK*** | 72.14 | 76.76 |
| ***NK*** | 12.59 | 11.48 |
| ***OK*** | 14.44 | 11.52 |
| ***ClK*** | 00.61 | 00.22 |
| ***PrL*** | 00.22 | 00.02 |
| ***Matrix*** | Correction | ZAF |

**Supplementary Information SI 1(c): EDX image of Pr-PIn**

|  |  |  |
| --- | --- | --- |
| ***Element*** | ***Wt%*** | ***At%*** |
| ***CK*** | 78.18 | 81.74 |
| ***NK*** | 12.11 | 10.86 |
| ***OK*** | 09.40 | 07.38 |
| ***NdL*** | 00.31 | 00.03 |
| ***Matrix*** | Correction | ZAF |



**Supplementary Information SI 1(d): EDX image of Nd-PIn**



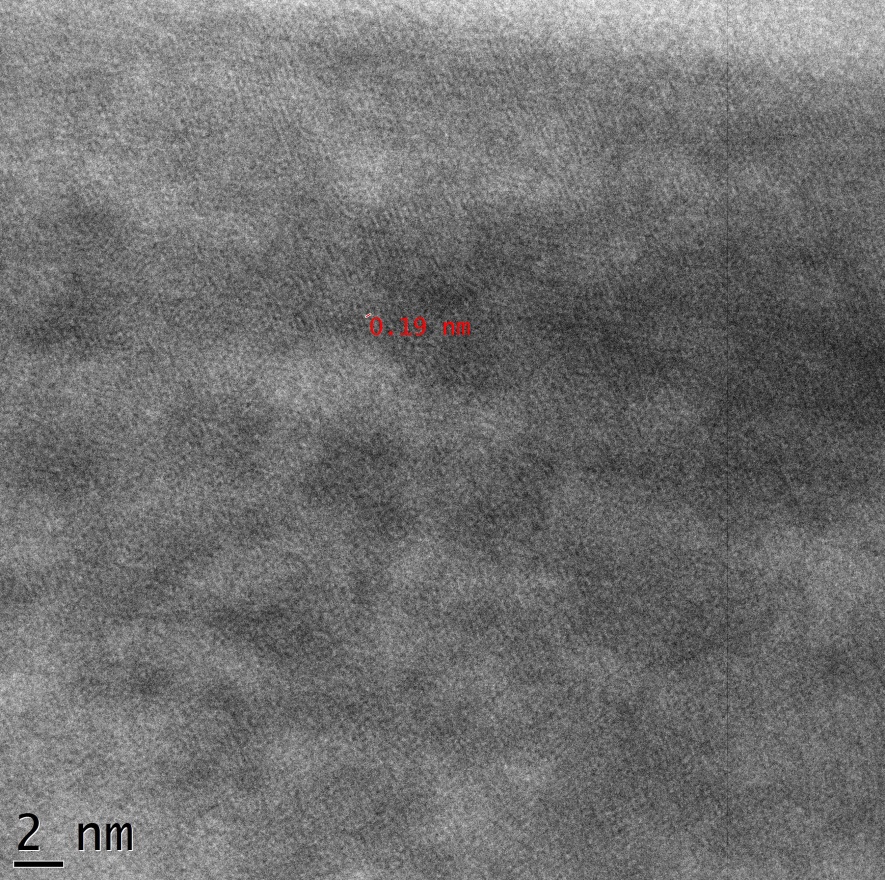
**Supplementary Information SI 2(a): PXRD peaks of La-PIn**



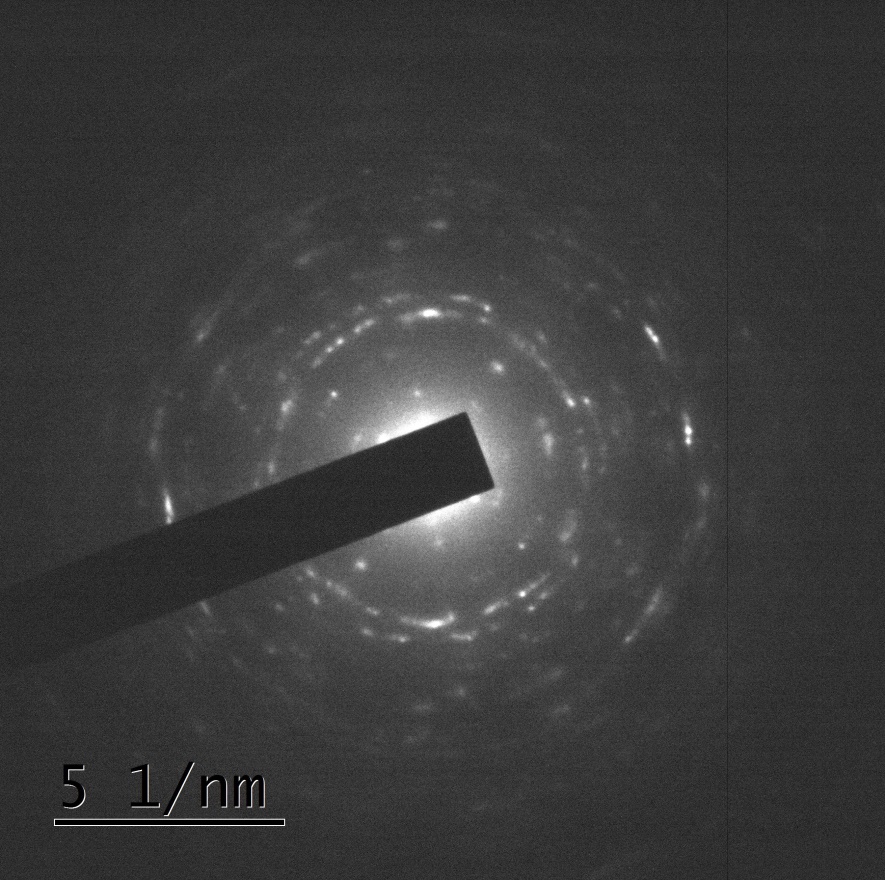
**Supplementary Information SI 2(b): PXRD peaks of Pr-PIn**



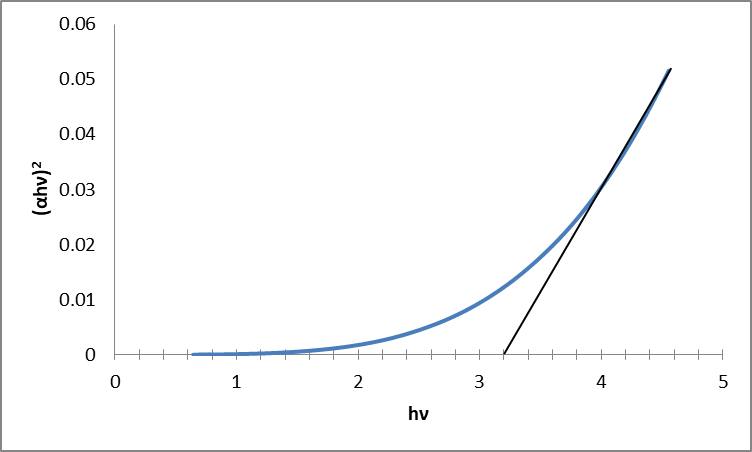
**Supplementary Information SI 2(c): PXRD peaks of Nd-PIn**



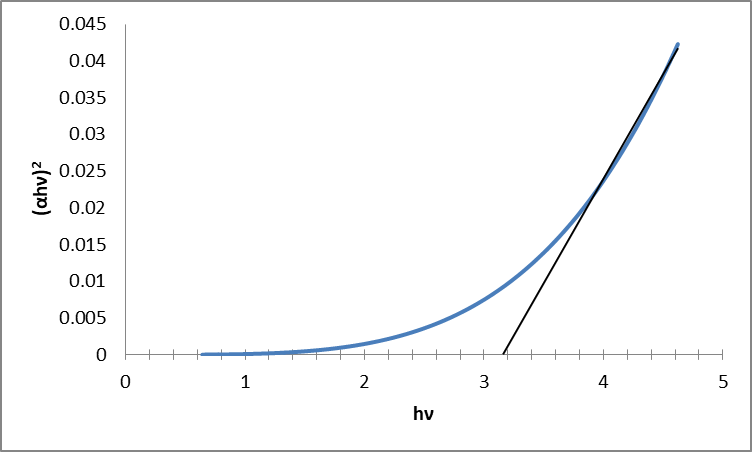
**Supplementary Information SI 3(a): TEM image of Pr-PIn showing inner core shell size**



**Supplementary Information SI 3(b): SAED image of Pr-PIn showing crystalline nature**

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**Supplementary Information SI 4(a): Tauc plot of oligomer PIn showing the band gap Eg (eV).**

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**Supplementary Information SI 4(b): Tauc plot of oligomer Pr-PIn showing the band gap Eg (eV).**